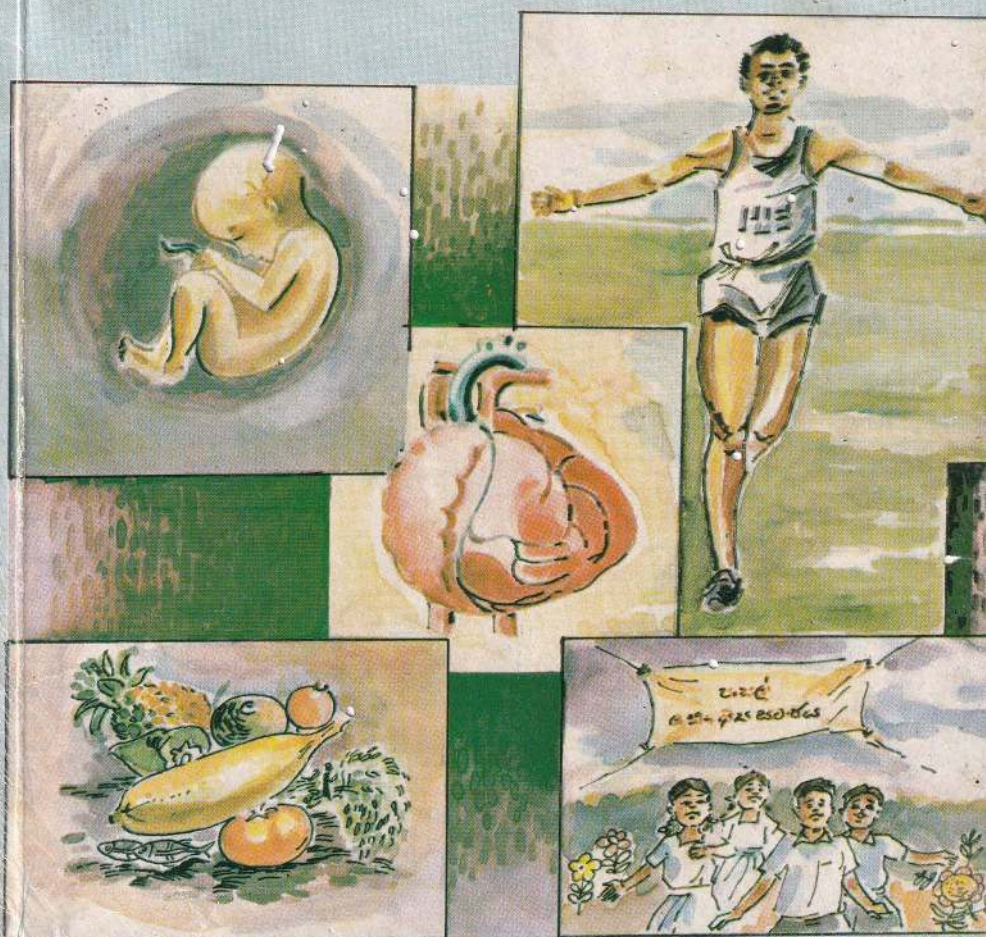


Health & Physical Education

Grade - 9



Health & Physical Education

Grade - 9

Educational Publications Department

First Edition 2004

Second Edition 2005

All rights reserved

Printed at the State Printing Corporation
Panaluwa, Padukka and 130 C, Pagoda Road, Pitakotte.

2005/E/9/123/(4,000)

NATIONAL ANTHEM

Sri Lanka Matha

Apa Sri Lanka Namō Namō Namō Namō Matha

Sundara siri barini surandi athi soba mana Lanka

Dhanya dhanaya neka mal palathuru piri jaya boomiya ramya

Apa hata sapa siri setha sadana jeevanaye matha

Piliganu mana apa bhakthi pooja Namō Namō Matha

Apa Sri Lanka..... Namō Namō Namō Namō Matha

Oba ve apa vidya

Oba maya ana sathya

Oba ve apa shakthi

Apa hada thula bhakthi

Oba apa aloke

Apa ge anu prane

Oba apa jeevana ve

Apa mukthiya obe ve

Nava jeevana demine nithina apa pubudu karan matha

Gnana veerya vadawamina regena yanu mena jaya bhoomi kara

Eka mawakage daru kala bawina

Yamu yamu wee nopama

Prema wada sama bheda dhurerada

Namō Namō Matha

Apa Sri Lanka..... Namō Namō Namō Namō Matha

அபி வேலு பக மெகனே டுராவே
 பக நிவேனே வேசனா
 பக பாவாதி பக ருடிரசு வீ
 அப கச எலு டுலனா

பவாபிதி அபி வேலு ஸோதூர் ஸோதூரனே
 பக லேசு பதி வாதெனா
 பிவன் வன அப மெக நிவேனே
 ஸோதூர் கிபீசு டுலு வீ

ஸரப ம மென் கர்மனா டுலோதி
 வேசு கமநி டுலிதி
 ரன் மிதி டுலு நோவ பச மச ஸபனா
 கிதி கடு நோம டுலனா

அனந்த கமரகோன்

ஒரு தாய் மக்கள் நாமாவோம்
 ஒன்றே நாம் வாழு மில்லம்
 நன்றே உடலில் ஒடும்
 ஒன்றே நம் குருதி நிறம்

அதனால் சகோதரர் நாமாவோம்
 ஒன்றாய் வாழும் வளரும் நாம்
 நன்றாய் இவ் இல்லினிலே
 நலமே வாழ்தல் வேண்டுமன்றோ

யாவரும் அன்பு கருணையுடன்
 ஒற்றுமை சிறக்க வாழ்ந்திடுதல்
 பொன்னும் மணியும் முத்துமல்ல - அதுவே
 யான்று மழியாச் செல்வமன்றோ

ஆனந்த சமரக்கோன்
 கவிதையின் பெயர்ப்பு

Preface

This book is the English translation of the original publication designed for use in Grade 9. All those who assisted to bring out this reprint of the translation deserve my thanks.

P. H. I. Geeganage

Commissioner General of Educational Publications

Educational Publications Department

Isurupaya,

Battaramulla.

27th April 2005.

Foreword

This book is the English translation of the textbook කොටස 9 ගැටලුව අධ්‍යයනය - 9 ලේඛනය which was originally produced by the National Institute of Education and published by the Educational Publications Department.

It is noteworthy that special care has been taken to use the appropriate words and language expressions to suit the grade level of the students who will be using this book. To enhance the value and the application of this book a glossary is presented at the end of it. It will enable the students to be familiar with the technical terms and words used in the lessons.

I appreciate very much the contribution made by the panel of translators and editors towards compiling this book within a very short period. I am also grateful to all those who helped in this publication, during its production cycle.

S. L. Gunawardhana

Commissioner of Educational Publications
and Deputy Director General of Education

Educational Publications Department

Isurupaya,

Battaramulla.

Message of the Director General

An important feature of reforms in education is designing new syllabi and preparing textbooks for our schools. This textbook has been prepared accordingly. While adhering to the national education goals and basic competencies it provides opportunities for pupil centred teaching and learning.

In using this text book, the teacher's main responsibility is to identify the learner's likes and dislikes as well as abilities and disabilities and direct him, her towards a life-long education process through self-directed learning.

Parents and elders should take an interest in their children's education and help them whenever necessary thus providing active support to both the teacher and the child.

I am grateful to all those who contributed towards compilation and publication of this book.

Professor Lakshman Jayatilleke

Director General
National Institute of Education

About the English Translation

Direction

- S. L. Gunawardhana - Commissioner of Educational Publications

Translation Editing

- Jayanthi Pinnagoda - Former Principal
Devi Balika Vidyalaya
- S. M. S. P. Senanayake - Former Deputy Director of
Education (Physical Education)
- W. A. Nirmala Piyaseeli - Deputy Commissioner of
Educational Publications
- W. M. S. Rambadagalla - Assistant Commissioner of
Educational Publications

Glossary

- W. A. Nirmala Piyaseeli - Deputy Commissioner of
Educational Publications
- Lenin Mathivanam - Assistant Commissioner of
Educational Publications

Co-ordination

- W. M. S. Rambadagalla - Assistant Commissioner of
Educational Publications

Proof Reading

- Padma Samarasinghe
- Wasantha Alahakoon

Guidance

Professor Lakshman Jayatilleke
Director General
National Institute of Education

Direction

J. P. Herath
Assistant Director General
National Institute of Education

Professor Kolvin Goonaratne
Chairman,
State Pharmaceuticals Corporation

Professor Diyanath Samarasinghe
Chairman,
Dangerous Drugs Preventive Board

Co-ordination

Padminie Ranaweera,
Project Monitor
Health & Physical Education Project

Panel of Writers

Dr. Latha Hapugoda
Director
Health Education Bureau

Dr. H. Yakandawala
Health Education Bureau

Dr. Deepthi Perera
Health Education Bureau

Dr. Kanthi Ariyaratne
Health Education Bureau

Dr. Chandrani Piyasena
Scientist in Nutrition
Medical Research Institute

Dr. Varuni Silva
Senior Lecturer,
Faculty of Medicine
University of Colombo

Dr. Danistor L. Perera
Secretary
Director Board,
"Siddhaurveda" Chemical Drugs Company

Rohana Karunaratne
Assistant Director of Education

L. K. Jayaweera,
Assistant Director of Education

Milroy Jayamanne
Project Officer
Ministry of Education & Higher Education

Swarna Fanatunga
Alcohol and Drug Information Centre

Padminie Ranaweera
Project Officer
National Institute of Education

K. A. D. P. Sarathchandra,
Project Officer,
National Institute of Education

Mangalika Weerasinghe
Project Officer
National Institute of Education

Panel of Editors

W. A. Nirmala Piyaseeli
Assistant Commissioner of Educational Publications
Educational Publications Department

Padminie Ranaweera,
Project Officer
National Institute of Education

Mangalika Weerasinghe
Project officer
National Institute of Education

Cover Page and Art Work

Walton Wickramashinghe
Instructor of Arts
Hunumulla Central College

Project Assistance

R. M. T. S. K. Ranasinghe

CONTENTS

	Page No.
01. Health and Well being ...	01
02. Health Promotion ...	07
03. Our Heritage with Regard to Health ...	12
04. A Fulfilled Life ...	23
05. Our Fascinating Body ...	33
06. Growth Changes in the Body ...	46
07. Fulfilling Our Nutrition Requirements ...	61
08. Challenges and Protection ...	83
09. Rhythm ...	102
10. Posture ...	106
11. Physical Fitness ...	113
12. Athletics and Games ...	120
13. Adolescence ...	146
14. Sexuality and Reproduction...	162
15. Preparation for Life ...	177

CONTENTS

1	Introduction
2	Chapter I
3	Chapter II
4	Chapter III
5	Chapter IV
6	Chapter V
7	Chapter VI
8	Chapter VII
9	Chapter VIII
10	Chapter IX
11	Chapter X
12	Chapter XI
13	Chapter XII
14	Chapter XIII
15	Chapter XIV
16	Chapter XV
17	Chapter XVI
18	Chapter XVII
19	Chapter XVIII
20	Chapter XIX
21	Chapter XX
22	Chapter XXI
23	Chapter XXII
24	Chapter XXIII
25	Chapter XXIV
26	Chapter XXV
27	Chapter XXVI
28	Chapter XXVII
29	Chapter XXVIII
30	Chapter XXIX
31	Chapter XXX
32	Chapter XXXI
33	Chapter XXXII
34	Chapter XXXIII
35	Chapter XXXIV
36	Chapter XXXV
37	Chapter XXXVI
38	Chapter XXXVII
39	Chapter XXXVIII
40	Chapter XXXIX
41	Chapter XL
42	Chapter XLI
43	Chapter XLII
44	Chapter XLIII
45	Chapter XLIV
46	Chapter XLV
47	Chapter XLVI
48	Chapter XLVII
49	Chapter XLVIII
50	Chapter XLIX
51	Chapter L
52	Chapter LI
53	Chapter LII
54	Chapter LIII
55	Chapter LIV
56	Chapter LV
57	Chapter LVI
58	Chapter LVII
59	Chapter LVIII
60	Chapter LIX
61	Chapter LX
62	Chapter LXI
63	Chapter LXII
64	Chapter LXIII
65	Chapter LXIV
66	Chapter LXV
67	Chapter LXVI
68	Chapter LXVII
69	Chapter LXVIII
70	Chapter LXIX
71	Chapter LXX
72	Chapter LXXI
73	Chapter LXXII
74	Chapter LXXIII
75	Chapter LXXIV
76	Chapter LXXV
77	Chapter LXXVI
78	Chapter LXXVII
79	Chapter LXXVIII
80	Chapter LXXIX
81	Chapter LXXX
82	Chapter LXXXI
83	Chapter LXXXII
84	Chapter LXXXIII
85	Chapter LXXXIV
86	Chapter LXXXV
87	Chapter LXXXVI
88	Chapter LXXXVII
89	Chapter LXXXVIII
90	Chapter LXXXIX
91	Chapter LXXXX
92	Chapter LXXXXI
93	Chapter LXXXXII
94	Chapter LXXXXIII
95	Chapter LXXXXIV
96	Chapter LXXXXV
97	Chapter LXXXXVI
98	Chapter LXXXXVII
99	Chapter LXXXXVIII
100	Chapter LXXXXIX
101	Chapter LXXXXX
102	Chapter LXXXXXI
103	Chapter LXXXXXII
104	Chapter LXXXXXIII
105	Chapter LXXXXXIV
106	Chapter LXXXXXV
107	Chapter LXXXXXVI
108	Chapter LXXXXXVII
109	Chapter LXXXXXVIII
110	Chapter LXXXXXIX
111	Chapter LXXXXXX
112	Chapter LXXXXXXI
113	Chapter LXXXXXXII
114	Chapter LXXXXXXIII
115	Chapter LXXXXXXIV
116	Chapter LXXXXXXV
117	Chapter LXXXXXXVI
118	Chapter LXXXXXXVII
119	Chapter LXXXXXXVIII
120	Chapter LXXXXXXIX
121	Chapter LXXXXXXX
122	Chapter LXXXXXXXI
123	Chapter LXXXXXXXII
124	Chapter LXXXXXXXIII
125	Chapter LXXXXXXXIV
126	Chapter LXXXXXXXV
127	Chapter LXXXXXXXVI
128	Chapter LXXXXXXXVII
129	Chapter LXXXXXXXVIII
130	Chapter LXXXXXXXIX
131	Chapter LXXXXXXXI
132	Chapter LXXXXXXXII
133	Chapter LXXXXXXXIII
134	Chapter LXXXXXXXIV
135	Chapter LXXXXXXXV
136	Chapter LXXXXXXXVI
137	Chapter LXXXXXXXVII
138	Chapter LXXXXXXXVIII
139	Chapter LXXXXXXXIX
140	Chapter LXXXXXXXI
141	Chapter LXXXXXXXII
142	Chapter LXXXXXXXIII
143	Chapter LXXXXXXXIV
144	Chapter LXXXXXXXV
145	Chapter LXXXXXXXVI
146	Chapter LXXXXXXXVII
147	Chapter LXXXXXXXVIII
148	Chapter LXXXXXXXIX
149	Chapter LXXXXXXXI
150	Chapter LXXXXXXXII
151	Chapter LXXXXXXXIII
152	Chapter LXXXXXXXIV
153	Chapter LXXXXXXXV
154	Chapter LXXXXXXXVI
155	Chapter LXXXXXXXVII
156	Chapter LXXXXXXXVIII
157	Chapter LXXXXXXXIX
158	Chapter LXXXXXXXI
159	Chapter LXXXXXXXII
160	Chapter LXXXXXXXIII
161	Chapter LXXXXXXXIV
162	Chapter LXXXXXXXV
163	Chapter LXXXXXXXVI
164	Chapter LXXXXXXXVII
165	Chapter LXXXXXXXVIII
166	Chapter LXXXXXXXIX
167	Chapter LXXXXXXXI
168	Chapter LXXXXXXXII
169	Chapter LXXXXXXXIII
170	Chapter LXXXXXXXIV
171	Chapter LXXXXXXXV
172	Chapter LXXXXXXXVI
173	Chapter LXXXXXXXVII
174	Chapter LXXXXXXXVIII
175	Chapter LXXXXXXXIX
176	Chapter LXXXXXXXI
177	Chapter LXXXXXXXII
178	Chapter LXXXXXXXIII
179	Chapter LXXXXXXXIV
180	Chapter LXXXXXXXV
181	Chapter LXXXXXXXVI
182	Chapter LXXXXXXXVII
183	Chapter LXXXXXXXVIII
184	Chapter LXXXXXXXIX
185	Chapter LXXXXXXXI
186	Chapter LXXXXXXXII
187	Chapter LXXXXXXXIII
188	Chapter LXXXXXXXIV
189	Chapter LXXXXXXXV
190	Chapter LXXXXXXXVI
191	Chapter LXXXXXXXVII
192	Chapter LXXXXXXXVIII
193	Chapter LXXXXXXXIX
194	Chapter LXXXXXXXI
195	Chapter LXXXXXXXII
196	Chapter LXXXXXXXIII
197	Chapter LXXXXXXXIV
198	Chapter LXXXXXXXV
199	Chapter LXXXXXXXVI
200	Chapter LXXXXXXXVII
201	Chapter LXXXXXXXVIII
202	Chapter LXXXXXXXIX
203	Chapter LXXXXXXXI
204	Chapter LXXXXXXXII
205	Chapter LXXXXXXXIII
206	Chapter LXXXXXXXIV
207	Chapter LXXXXXXXV
208	Chapter LXXXXXXXVI
209	Chapter LXXXXXXXVII
210	Chapter LXXXXXXXVIII
211	Chapter LXXXXXXXIX
212	Chapter LXXXXXXXI
213	Chapter LXXXXXXXII
214	Chapter LXXXXXXXIII
215	Chapter LXXXXXXXIV
216	Chapter LXXXXXXXV
217	Chapter LXXXXXXXVI
218	Chapter LXXXXXXXVII
219	Chapter LXXXXXXXVIII
220	Chapter LXXXXXXXIX
221	Chapter LXXXXXXXI
222	Chapter LXXXXXXXII
223	Chapter LXXXXXXXIII
224	Chapter LXXXXXXXIV
225	Chapter LXXXXXXXV
226	Chapter LXXXXXXXVI
227	Chapter LXXXXXXXVII
228	Chapter LXXXXXXXVIII
229	Chapter LXXXXXXXIX
230	Chapter LXXXXXXXI
231	Chapter LXXXXXXXII
232	Chapter LXXXXXXXIII
233	Chapter LXXXXXXXIV
234	Chapter LXXXXXXXV
235	Chapter LXXXXXXXVI
236	Chapter LXXXXXXXVII
237	Chapter LXXXXXXXVIII
238	Chapter LXXXXXXXIX
239	Chapter LXXXXXXXI
240	Chapter LXXXXXXXII
241	Chapter LXXXXXXXIII
242	Chapter LXXXXXXXIV
243	Chapter LXXXXXXXV
244	Chapter LXXXXXXXVI
245	Chapter LXXXXXXXVII
246	Chapter LXXXXXXXVIII
247	Chapter LXXXXXXXIX
248	Chapter LXXXXXXXI
249	Chapter LXXXXXXXII
250	Chapter LXXXXXXXIII
251	Chapter LXXXXXXXIV
252	Chapter LXXXXXXXV
253	Chapter LXXXXXXXVI
254	Chapter LXXXXXXXVII
255	Chapter LXXXXXXXVIII
256	Chapter LXXXXXXXIX
257	Chapter LXXXXXXXI
258	Chapter LXXXXXXXII
259	Chapter LXXXXXXXIII
260	Chapter LXXXXXXXIV
261	Chapter LXXXXXXXV
262	Chapter LXXXXXXXVI
263	Chapter LXXXXXXXVII
264	Chapter LXXXXXXXVIII
265	Chapter LXXXXXXXIX
266	Chapter LXXXXXXXI
267	Chapter LXXXXXXXII
268	Chapter LXXXXXXXIII
269	Chapter LXXXXXXXIV
270	Chapter LXXXXXXXV
271	Chapter LXXXXXXXVI
272	Chapter LXXXXXXXVII
273	Chapter LXXXXXXXVIII
274	Chapter LXXXXXXXIX
275	Chapter LXXXXXXXI
276	Chapter LXXXXXXXII
277	Chapter LXXXXXXXIII
278	Chapter LXXXXXXXIV
279	Chapter LXXXXXXXV
280	Chapter LXXXXXXXVI
281	Chapter LXXXXXXXVII
282	Chapter LXXXXXXXVIII
283	Chapter LXXXXXXXIX
284	Chapter LXXXXXXXI
285	Chapter LXXXXXXXII
286	Chapter LXXXXXXXIII
287	Chapter LXXXXXXXIV
288	Chapter LXXXXXXXV
289	Chapter LXXXXXXXVI
290	Chapter LXXXXXXXVII
291	Chapter LXXXXXXXVIII
292	Chapter LXXXXXXXIX
293	Chapter LXXXXXXXI
294	Chapter LXXXXXXXII
295	Chapter LXXXXXXXIII
296	Chapter LXXXXXXXIV
297	Chapter LXXXXXXXV
298	Chapter LXXXXXXXVI
299	Chapter LXXXXXXXVII
300	Chapter LXXXXXXXVIII
301	Chapter LXXXXXXXIX
302	Chapter LXXXXXXXI
303	Chapter LXXXXXXXII
304	Chapter LXXXXXXXIII
305	Chapter LXXXXXXXIV
306	Chapter LXXXXXXXV
307	Chapter LXXXXXXXVI
308	Chapter LXXXXXXXVII
309	Chapter LXXXXXXXVIII
310	Chapter LXXXXXXXIX
311	Chapter LXXXXXXXI
312	Chapter LXXXXXXXII
313	Chapter LXXXXXXXIII
314	Chapter LXXXXXXXIV
315	Chapter LXXXXXXXV
316	Chapter LXXXXXXXVI
317	Chapter LXXXXXXXVII
318	Chapter LXXXXXXXVIII
319	Chapter LXXXXXXXIX
320	Chapter LXXXXXXXI
321	Chapter LXXXXXXXII
322	Chapter LXXXXXXXIII
323	Chapter LXXXXXXXIV
324	Chapter LXXXXXXXV
325	Chapter LXXXXXXXVI
326	Chapter LXXXXXXXVII
327	Chapter LXXXXXXXVIII
328	Chapter LXXXXXXXIX
329	Chapter LXXXXXXXI
330	Chapter LXXXXXXXII
331	Chapter LXXXXXXXIII
332	Chapter LXXXXXXXIV
333	Chapter LXXXXXXXV
334	Chapter LXXXXXXXVI
335	Chapter LXXXXXXXVII
336	Chapter LXXXXXXXVIII
337	Chapter LXXXXXXXIX
338	Chapter LXXXXXXXI
339	Chapter LXXXXXXXII
340	Chapter LXXXXXXXIII
341	Chapter LXXXXXXXIV
342	Chapter LXXXXXXXV
343	Chapter LXXXXXXXVI
344	Chapter LXXXXXXXVII
345	Chapter LXXXXXXXVIII
346	Chapter LXXXXXXXIX
347	Chapter LXXXXXXXI
348	Chapter LXXXXXXXII
349	Chapter LXXXXXXXIII
350	Chapter LXXXXXXXIV
351	Chapter LXXXXXXXV
352	Chapter LXXXXXXXVI
353	Chapter LXXXXXXXVII
354	Chapter LXXXXXXXVIII
355	Chapter LXXXXXXXIX
356	Chapter LXXXXXXXI
357	Chapter LXXXXXXXII
358	Chapter LXXXXXXXIII
359	Chapter LXXXXXXXIV
360	Chapter LXXXXXXXV
361	Chapter LXXXXXXXVI
362	Chapter LXXXXXXXVII
363	Chapter LXXXXXXXVIII
364	Chapter LXXXXXXXIX
365	Chapter LXXXXXXXI
366	Chapter LXXXXXXXII
367	Chapter LXXXXXXXIII
368	Chapter LXXXXXXXIV
369	Chapter LXXXXXXXV
370	Chapter LXXXXXXXVI
371	Chapter LXXXXXXXVII
372	Chapter LXXXXXXXVIII
373	Chapter LXXXXXXXIX
374	Chapter LXXXXXXXI
375	Chapter LXXXXXXXII
376	Chapter LXXXXXXXIII
377	Chapter LXXXXXXXIV
378	Chapter LXXXXXXXV
379	Chapter LXXXXXXXVI
380	Chapter LXXXXXXXVII
381	Chapter LXXXXXXXVIII
382	Chapter LXXXXXXXIX
383	Chapter LXXXXXXXI
384	Chapter LXXXXXXXII
385	Chapter LXXXXXXXIII
386	Chapter LXXXXXXXIV
387	Chapter LXXXXXXXV
388	Chapter LXXXXXXXVI
389	Chapter LXXXXXXXVII
390	Chapter LXXXXXXXVIII
391	Chapter LXXXXXXXIX
392	Chapter LXXXXXXXI
393	Chapter LXXXXXXXII
394	Chapter LXXXXXXXIII
395	Chapter LXXXXXXXIV
396	Chapter LXXXXXXXV
397	Chapter LXXXXXXXVI
398	Chapter LXXXXXXXVII
399	Chapter LXXXXXXXVIII
400	Chapter LXXXXXXXIX

1. Health and Wellbeing

Observe how the normal life span of a person living in Sri Lanka has changed over the past century.

	Years
1871	40.0
1946	42.2
1953	58.2
1963	61.7
1971	65.5
1981	69.9
1991	72.5

Central Bank report, 1996

We can see at a glance that today we have an opportunity to enjoy a longer life span. An opportunity we have not had earlier! We are provided with a fascinating body that helps us to spend our entire life fruitfully. You may have already devoted attention to safeguard this fascinating body you possess, to provide it with the required nutrition, and make the maximum use of it.



Fig 1.1 A healthy life is fascinating!

What is your definition of health? Health should be looked upon as a mixture or a combination of various conditions related to the physical, mental and social wellbeing of an individual. What you have learnt so far could be condensed as follows:

Physical wellbeing	Mental wellbeing	Social wellbeing
Body free of disease and illness.	happiness	respecting others
Physical fitness	ability to adapt to new conditions	cooperative and friendly
Active	flexibility	carrying out obligations and responsibilities.
Proper nutrition	correct decision making various modes of appreciation and enjoyment	affection collective feeling

Through these you can find out about the advantages you gain by reaching perfection physically, mentally and socially.

A healthy person develops his or her productivity personally. A healthy individual has in his possession many resources that could be invested for his own personal development.

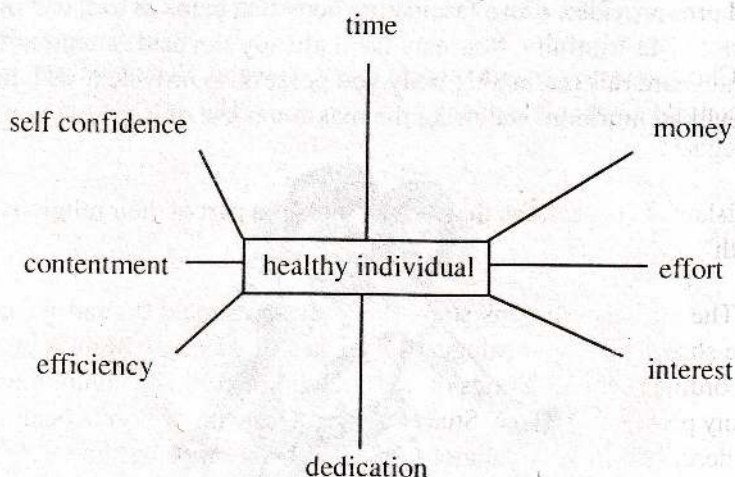


Fig. 1.2 Things that a healthy individual could devote towards his development

A healthy person could devote much more time, effort and money on his development than a person who constantly falls ill. The time, money and effort spent on the illness of oneself or ones family member is an obstruction towards one's development. A healthy individual has confidence in himself. He has no doubt about his physical fitness. Due to the ability of being active one could maintain his or her interest and dedication. Due to the ability to work, and the ability to complete that work in the correct manner they can be contented. All these factors together will bring about the personal development of an individual.

Various religions mention about the health of man as follows. In Buddhism an important place is given to this as written in the following pali stanza:

"Arogya Parama Labha

Santhutthi Paraman Danan" which means,

Health is the noblest gain and happiness the noblest wealth. Hinduism stresses on many facts with regard to being healthy and happy. Here a significant place is given to cleanliness, physical fitness and proper nutrition.

Christianity too gives a supreme place to health. Here good health is considered as noble as the almighty god. "Have faith in god to safeguard ones health" says the Holy Bible.

Islam people believe that " cleanliness is a part of their religious faith"

The various religions stress on what one should do and what one should not do to safeguard ones health. Hence leading a life according to the teachings of one's religion will find a solution to many problems we face. Study the messages with respect to health as described in your religion. You will be surprised to know the extent to which the various religions have described the practices that should be followed to maintain a healthy life.

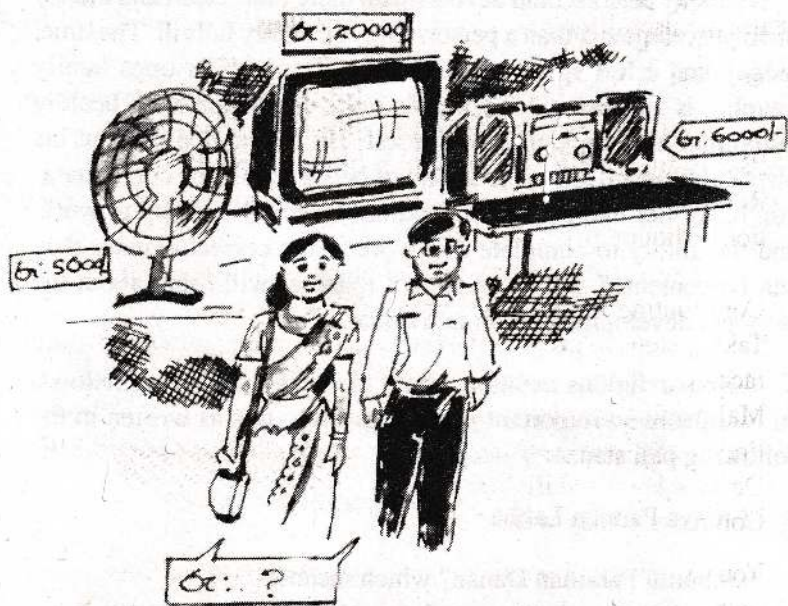


Fig. 1.3 Can you value your body?

Any item could be given a value, but can you value your body? Think again as to whether you pay sufficient attention towards the wellbeing of your body that is so invaluable?

According to statistics, in Sri Lanka, high blood pressure and coronary heart diseases occupy a main place among the diseases that showed a rapid increase during the past three decades. In 1995 alone out of the total population, the death rate was 16.8 per hundred thousand due to coronary heart disease. 3.1 per hundred thousand have been due to high blood pressure. The death rate due to Malaria has been 3.1 per hundred thousand. Considering these facts, a certain curiosity arises in us as to whether there is some mismatch between our present life style and our health. You who are concerned about your future, many be dreaming of making it a pleasant one. However, it should be stressed that the basic foundation for building a pleasant future should be prepared according to the physical, mental and social development you achieve today.

Developing behavioural patterns that are favourable for your health are useful for your long term **wellbeing**.

Examples:

- * Developing correct habits of taking food.
- * Paying attention to the physical fitness.
- * Refraining from harmful habits such as smoking and consumption of liquor.
- * Not contributing towards the pollution of the environment.
- * Contributing towards food production.
- * Taking steps to promote a good understanding among different races.
- * Maintaining healthy sexual behaviour.
- * Prevention from accidents and facing challenges successfully.
- * Developing the skills and abilities.
- * Controlling body weight.

You will get the opportunity of studying these various facts, under the subject of Health and Physical Education. It is very important that you study these facts, keeping in mind the responsibility you have with regard to health and wellbeing. Today many of our elders suffer from illnesses such as heart diseases, high blood pressure or hypertension, diabetes, cancer, and arthritis. Often, these diseases are also a cause of death.

When you give thought to health and wellbeing it is not wise for you to be concerned about the present day only.

Can you say something about your position in another 10 years, 20 years, 30 years and 40 years? Can you keep any target regarding your future?

Example: In another 10 years time,

I will be doing higher studies / complete my studies and do a profession.

- * My height will be
- * My weight will be
- * I will continue with as my hobbies.

- * I will look after my parents.
- * I will be residing in an environment
- * I will live happily
- *
- *

In another 20 years time,

- * I will be a mother/father having healthy children.
- * I will not smoke.
- *
- *

The health and wellbeing of a person results in the development of the individual as well as in the development of the country. In our country the amount of money spent on health and wellbeing by the various institutions is very large. Further more, in a country with an unhealthy population, the loss resulting from the dearth of human resource is high. They are unable to contribute their total strength on the development of the country. In the developing countries of the world, an individual's trend in falling sick is 6 days per month. However in a developed country this number is roughly estimated to be about 1/3 days per year. Thus the deterioration of health of an individual in a developing country, is a loss, the country cannot afford.

The loss incurred in a work place, due to the people working there falling sick often is immense. Constant absenteeism, reduction in efficiency and so on will result in a reduction in the, productivity. If you get an opportunity, discuss about these with the man power officer of an institution or factory and collect information.

The work force that contributes towards the development of the country is in the range of 15-60 years of age. It is of vital importance that in a developing country, the maximum contribution of this work force be utilized for the development of the country. Hence your health that is taken care of by you will be beneficial to you as well as to all of us as a nation.

2. Health Promotion

What is health?

When thinking about health what is it that comes to your mind? Diseases and illnesses, hospitals, doctors, nurses, community health teams, medicines! aren't they? However health does not mean only being free from diseases. As defined by the world health organization, health does not mean being only free from diseases, but the existence of a total wellbeing with respect to the physical, mental and social aspects. The ability of maintaining one's health depends on various factors. The existence of resources necessary to fulfil one's necessities and the existence of an environment favourable for health are two main factors among these.

The unfavourable factors prevailing in one's environment have a strong influence on his or her **physical** and **mental health**. The concept of **health promotion** has emerged as a result of the deep consideration given to this relationship. By this means, the risks and challenges with regard to health are not only minimized but this also contributes towards the total development of the individual and the community and also towards the development of self confidence and security of the individual.

The responsibility of health promotion should be borne at personal level and also as a collective effort. Safeguarding the health of the community is not something meant for the health professionals only. Creating an environment favourable for health is a responsibility of every individual who can change the social environment. They include, town planners, architects, engineers, educationists, community leaders and so on. Working together with all these groups is the responsibility of the health professionals.

When learning the concept of health promotion, it would be useful to understand the meaning of health education.

Health education is a learning process that would help one to develop further, one's own favourable behavioural patterns with

regard to health in order to safeguard from diseases and also to improve one's health.

Here, more attention is devoted towards the behaviour of an individual or of the community at large. More attention is devoted to factors such as, knowledge, attitudes, and beliefs related to behaviour. By bringing about changes in these factors, changes in the behaviour are brought about. The final aim of health education is the maintenance of a healthy life of an individual through the adjustment one's behaviour.

However even if one develops desirable attitudes and inculcates good health habits through health education, if one has to live amidst environmental factors unsuitable for a healthy life it will be difficult for that person to maintain the behavior or health habits already developed.

Examples : Advertisements regarding liquor and cigarettes smoking in public places.

Through health promotion, such undesirable environmental factors could be controlled or eradicated from the society.

Examples: Controlling the advertisements on cigarettes and liquor.

Thus for the maintenance of a healthy wellbeing it is necessary that we should, arrive at a desirable life style and also provide, ourselves with suitable and favourable environmental factors.

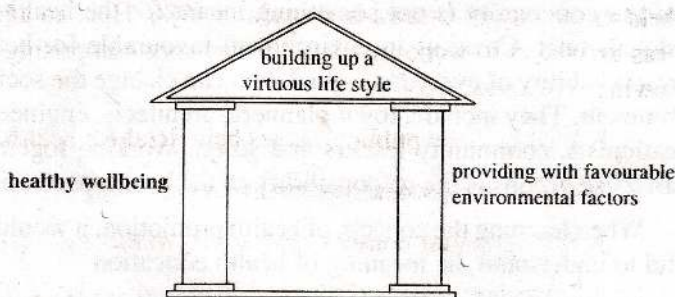


Fig. 2.1 A healthy wellbeing is built up on a virtuous life style and favourable environmental factors.

As an example let us consider the minimizing of accidents met by motorcyclists. In Sri Lanka a large number of motorcyclists die or become disabled due to accidents.

Even though public awareness on this has been increased and also awareness given to change the attitudes, a considerable number still ride motorcycles without wearing protective helmets. In order to control this further, legal action is taken against and fines imposed on motorcyclists riding without helmets. This is a step taken to build up a favourable environmental condition. Thus this can be regarded as a step taken towards health promotion.

Principles of Health Promotion

In health promotion, instead of targeting individuals who are in danger against a particular disease, the individual and the environment in which he lives is considered as a society and the necessary actions taken. Based on the various factors that affect health, various plans of action have been taken towards health promotion. Communication, education, imposing of legislature, imposing taxes, institutional changes and community development are a few of these.

In this process of health promotion which is targeted at an efficient and strong community participation, it is important that we improve or develop the skills of identifying the priorities of the community and also the skills of decision making.

The concept in this regard was first forwarded at a conference held in the city of Ottawa in Canada in 1986. Here an agreement was arrived at to work on a basic framework comprising the following five areas.

1. Laying down public policies beneficial for health.
2. Creating a cooperative environment.
3. Strengthening community participation.
4. Improvement of personal abilities and skills.
5. Reorganization of health services.

1. Formulation of policies beneficial for health

It is necessary that the policy makers take public health into consideration and include it in their agenda. By this means it is possible to identify the factors affecting health and formulate policies by taking them into consideration.



Fig. 2.2 Iodised salt is available in plenty in the market.

- Examples:**
- * Addition of Iodine to salt taken with food and making it available in plenty.
 - * Providing relief to low income families.
 - * Prohibiting smoking and liquor consumption in public places.
 - * Prohibiting the advertising of cigarettes and liquor through the media.

2. Creating a cooperative environment.

Through the creation of a cooperative environment in the work place it will be possible to maintain favourable health practices.

- Examples:**
- * Facilities for exercises
 - * An environment suitable for mental development.
 - * 84 day leave for the working mother to breast feed the child and provision to leave one hour early for this purpose.
 - * Facilities for lunch in the schools.

3. Community participation

Health promotion works well, through an efficient community participation. The responsibility is thrust on the community, through its participation in every step such as identifying problems or necessities, selecting priorities, decision making, and planning and implementation of methodologies.

Examples: * Activities carried out by school health clubs (dengue eradication programme) Construction of a public well by "shramadana"

4. Improvement of personal abilities and skills.

Health promotion assures personal and social development by the supply of information, providing education and developing life skills to maintain health. By these means it is possible to identify one's health and factors affecting health. Also it provides an opportunity to exercise more control on them.

Example: * Developing useful life skills through health education

Providing opportunity to develop aesthetic skills, and skill in sports.

5. Reorganisation of health services

The responsibilities with respect to health are not confined only to the professionals working for the health services. Health promotion makes it clear that it is a responsibility of everybody. One responsibility of health personnel is to seek the co-operation of the professionals in other services and also coordinate with them.

Example: * Work along with other sections of the society to control dengue and cholera. Functioning of a hospital committee to develop hospitals.

It is the responsibility of every citizen to minimise the risks existing in his or her environment and also use resources efficiently and intelligently. Safeguarding the rights of the people and the ability of the people to organise their work are important factors where the maintenance of health is concerned. Accordingly a community where there are people who have the required knowledge, reliability and ability to develop the environment in which they live can be mentioned as a more healthy community. This is so, not merely because of the ability they possess to improve the physical environment but because of the relationship that exist in their mental health, selfconfidence, and the ability and strength they possess to implement the activities.

3. Our Heritage with Regard to Health

Ayubowan! (May you live long!)

When anointing oil at the auspicious time during the Sinhala New Year we have heard an elderly person recite a sinhala verse, which means as follows.

The black crow will never turn white nor the pestle will never sprout nor will a piece of a rice grain grow into a new plant. Likewise may you live not a hundred and twenty years but two hundred and twenty long years. We all like to live long.

In our Tamil homes too a similar saying is heard of which means long life.

When we attend a village 'Thovil' house (a ritual to quieten demons and other harmful beings believed to plague humans) a blessing we often hear is 'Ayubowewa'.

A disease free long life could have been an expectation of man from early times. One who is disease free is healthy and comfortable.

Even today, in our villages, when two elders meet they address each other as, "How are you ayubowan" In every society the world over wishing longevity is something that is highly appreciated.

Enjoying longevity

Aurveda the traditional system of medicine, can be described in brief as the science of life. Aurveda teaches the science of enjoying long life or longevity.

According to Aurveda the life of a person could be categorized into 4 types.

- i. Healthy life
- ii. Sorrowful life

iii. Virtuous life

iv. Non-virtuous life

Health means wellbeing leading a healthy life means leading a life that is socially, physically, mentally and spiritually balanced. A life full of sorrow is a sorrowful life. What we need from among these is a healthy life.

A virtuous life means leading a morally good life without causing any trouble to anyone. Nonvirtuous means the opposite of this. Being faithful to the society is a quality of a virtuous life. It is virtue that is appreciated. Hence a virtuous life is a necessity.

Hence in order to lead a long life a person should select a healthy and virtuous wellbeing. Ways and means that could be practised to maintain a healthy and virtuous life style are described in Aurveda. This is known as, conservation of hygiene. We realizes that being healthy is a most valuable resource we could receive in life. Happiness too rests on this.

Aurveda, shows us three things a man should seek during his lifetime. They are:

- i. Means of protecting one's health and life
- ii. Means of developing one's socio-economic environment
- iii. Means of seeking spiritual comfort

The early situation

When considering our ancestral society, why do we consider the works of our ancestors as ingenious, clever and miraculous? There was an era where huge tanks and lakes not second to the seas, dagabas that rose to the sky paddy fields that extended far and wide were results of manual labour, Sri Lanka was named as the grannary of the east owing to the prosperity and development that prevailed then. Due to the high level of physical and mental strength possessed by these ancient men they even turned out to be warriors who could resist enemy invasions of foreigners who came

to this country to grab these resources. It is a known fact that a vast amount of local knowledge capable of fulfilling all these obligations have been handed from generation to generation. This is the national identity related to our health. Aurveda is the foundation of this.

Even today, when inquiring from a century old villager, his instant reply would be that through the life style that prevailed during the early age he achieved good health without effort. If we walk into a village that is considered as underdeveloped, it is not a difficult task finding elders who are close upon hundred years or even above hundred years of age. Their physical and mental strength reveals well the wholesome life they have spent in the past.

There is much we could learn by investigating about the life style of such a fortunate and healthy adult. It is definite that this would provide living evidence of the fact that we receive a healthy life due to the healthy life style built upon food, drinks, habits and behaviour.

The path to a healthy life

The mode of health conservation in Aurveda is based on man's natural life style. This should change from individual to individual such that it would suit that particular individual. The physical, mental and social factors with regard to each individual is always varied. When safeguarding health too, this specific identity is extremely important because all life styles should be adjusted in conformity with it. Considering in general, there is a principle that could be followed in order to be free from diseases.

This is known as 'sadvrthaya' in aurveda (This means virtuous behaviour.) ('**sad**' means virtuous and '**vrthaya**' means 'way of behaviour'). This represents some moral means that are useful to maintain the individual, physical, mental, social and spiritual balance.

The way we conduct ourselves during the day or the mode of action that should be practised during the day is the daily routine.

The daily routine can be divided as daytime behaviour or routine and night time behaviour routine. Here we describe the manner in which one should carryout the daily activities from the time of waking up in the morning to the time of going to sleep, in a healthy way.

Also, in Aurveda there is a mode of action in the behaviour, so as to suit each season of the year according to the seasonal changes that take place. This is known as 'seasonal behaviour'.

Accordingly, the life patterns of people living in climatic zones belonging to various geographical environments should be adjusted, on this basis to suit them.

Similarly one should understand that during various instances we should change our behaviour to suit various physical conditions. An expectant mother for example should follow, "expectant behavioural methods".

Also during various disease conditions one must findout what is suitable and what is not suitable, and behave accordingly. In normal village language this is known as safeguarding "paththium".

This implies that a uniform lifestyle is not favourable for health. A favourable life style is one with a variety of active behavioural patterns. It is a 'live chain of actions' that make all aspects of life become active to the same extent.

Such lifestyles are useful to create a more complete individual who is physically, mentally, socially and spiritually developed. Medicine or drugs that produce energy to the body organs by constantly refreshing life and maintaining happiness are known as, 'chemicals'. Among such chemicals, what is considered as the noblest is the 'chemical of ethics'. This means behaviour according to 'dhamma'. The satisfaction one receives through participation in virtuous actions is considered as a maximum state of good health the success that could be obtained from such behaviour is

known as 'winning the senses'. Development of the habit of satisfying ones senses by unsuitable means, may lead to a state where the senses will take over the control of the individual. His senses will not obey him. The success of life rests on the control of the senses. Although this may give an impression of entering the order, this is not its intention. One should 'win the senses' such that each sense could function well for a long time without it getting weaker. For each sense to function better, it is necessary that its control should be possessed by the individual who owns it. Through physical exercises one gets accustomed to control ones physical responses to a certain extent. Spiritual exercises provide the mental energy required to control the senses. Accordingly it is clear that, ones behaviour according to Dhamma plays a very important role in protecting ones personal health as well as developing the social morality.

Signs of good health

There are two basic aims or intentions of aurveda

- i. Prevention of diseases
- ii. Healing of diseases

According to aurveda, it is accepted that rather than treating a person who has contacted a disease it is important to findout the causes of the disease and take measures to prevent it. Even today it is a world accepted fact that prevention is better than cure. This is why special attention is given to primary health conservation. There are various causes for the occurence of diseases. However the body possesses natural means of resisting many diseases. Owing to this natural immunity we do not need any treatment for many of the diseases we contact. What we should do here is to take steps to further increase the natural immunity of the body. This is health conservation. The behavioural characters of a healthy person is based on equilibrium. Hence it is important to maintain this.

- (i) Food and drinks
- (ii) Sleep and rest
- (iii) Physical and mental satisfaction

Here food and drinks mean the supply of energy required to maintain the physical and mental activities. Sleep and rest helps in the repair of the parts of the body that are worn out and also in providing mental satisfaction. By pleasing the senses, happiness and satisfaction are obtained. However when receiving these basic requirements attention is drawn to the importance of keeping them under control. Today when looking at our society, it is evident that due to their complex expectations and also due to their uncontrollable likes, they are trying to satisfy these requirements by dishonest means.

Virtuous middle path

For this purpose it is important that we practise the virtuous middle path. This is a simple methodology that could be put into practise in every life activity.

- i. Consumption beyond required limits
- ii. Consumption below the required limits
- iii. Consumption in the correct way

By working within these limits, an intelligent form of consumption such as that existing between body organs and aims and that existing between organs and actions could be introduced.

Similarly it is necessary to get rid of factors that are unfavourable for health. What is important here is not to bear up natural impulses that arise in the body. This means that one should not prevent any physical impulses like hunger, thirst, the requirement for removal of feces and urine, sneezing etc. It is a way of giving support to the natural mechanisms in our body. Due to prevention of these, the reaction that arises in the body against these affects health directly. If the necessity to defecate is avoided due to some reason or other or forgotten or avoided purposely think of the discomfort you will feel.

The other fact that is connected to this is the necessity to control the mental impulses. Specially the control of unfavourable impulses like lust, hatred, envy and ego. will evoke good results on the individual as well as on the society. Getting accustomed to

the control of these mental impulses will help in the improvement of mental health. Relaxation of the mind through sports and enjoyment, development of the mind through exercising the mind such as meditation will be useful in this. Leading a healthy life may not only improve the physical and mental aspect of the individual but will also result in the improvement of the socio economic environment. Accordingly aurveda describes four resources, that could be sought by a healthy person.

- (i) Leading a religious life
- (ii) Development of the economy
- (iii) Being happy in life
- (iv) Spiritual development

Accidents likely! Take care

The body should be maintained in proper order. It is only then that the various organs contained within it will function properly. Think of a vehicle. It requires fuel. Before making it function it is necessary to be observant about its condition.

It should be serviced at the proper time. If there are any faults in it, it is essential that they should be looked into and attended to. If one attempts to get maximum use of a vehicle without giving it the necessary attention, it will soon turn out to be ineffective. Today's youth are of the opinion that they will not be subjected to any serious disease as they are in good health and that they could resist any disease condition. Due to this wrong impression itself they consume things that are not favourable to health. This itself results in pushing them to a disease condition in a later time. Health is a condition we acquire effortlessly but should be maintained by us with effort. During the present day specially the threats that prevail against health are many and serious. Everything around us is dangerous. The label, "Accidents likely handle with care" applies to everything.

Really speaking, today our surroundings and many things we use are prone to accidents. Our life style has become harmful to us as we are greatly inclined towards commercialisation.

What we eat and drink

Our food patterns and food habits are extremely important when safeguarding health. It should be specially emphasized here that one should draw special attention not only to the nutritional value of food but also towards its healthwise value. Aurveda teaches some important factors that we should be aware of with regard to food.

- i. Time during which food is taken.
- ii. Nature of food
- iii. Kinds of food
- iv. Combinations of food
- v. Preparation of food
- vi. Food habits and behaviour
- vii. Amount of food
- viii. Degree of hunger
- ix. Suitability
- x. Mentality

It is obviously evident that all the above factors influence the nutritional and health value of a meal.

The time at which we should take food should not be decided by the 'strike of the wall clock'. It is something that should take place according to the requirements of the body. When hunger is well felt the time to take food has come. We feel hungry, when the food already taken by us had digested properly. Hunger and appetite for food develops then. Taking food when not hungry and not taking food when hungry are equally harmful.

The nature of food is also very important. The nature of food varies according to whether, it should be taken raw? or taken after been cooked? or whether it is food that needs to be chewed. Factors such as the temperature, roughness, freshness etc of food too come under the nature of food.

It is necessary to be concerned about the kinds of food we take. According to Aurveda all foods can be group into a number of categories. All food categories that have been subjected to a formal classification, such as, cereals, meat, fish, vegetables, green

leaves, milk, water, spices, oil, should be included a meal. In Aurveda, a review of the value of food is given with regard to the place, period and different aspects of the food that is taken. For example the nutritional value of meat belonging to the same animal will depend on as to whether it is male or female, the age, the area where it lived, the organ from which meat was obtained, time of obtaining etc. In the case of plant food too it is the same.

Similarly it is important to know the favourable and unfavourable results of consuming combinations of food. Certain foods show a qualitative improvement when they are mixed and they are more favourable for health. Certain foods when mixed together give unfavourable results. These foods are harmful to health. Our ancestors knew ways of preparing good combinations of food that could make up for any deficits that existed, food that could provide the body with the required nutritional value and food where the nutrients started functioning within the body by means of mutual relationships giving more results.

When preparing food, one should be observant about some factors which have a great influence on nutrition and health. It should be understood that the manner in which food is obtained, the manner of storage, utensils and other tools used in preparation of food, the additional substances that are added during cooking etc are useful in improving the quality of the food. Similarly using wrong techniques for the preservation of food may bring about serious adverse results. Our village mothers new well about ways of preserving food so that the nutritive and health value of food could be conserved. Aurvedic knowledge has been uniquely made use of in our traditional home economics and successful results have been obtained through this.

It is evident that food habits and behaviour definitely have an influence on health and nutrition. The posture in which food is taken, the speed and the attitude shown when selecting food is also important. The appetite for food as well as the manner in which food is taken vary from person to person. However all these behaviours finally influence health. Habits such as drinking cool

water after taking food, taking some artificial drink in place of water after taking food, sleeping or bathing immediately after taking food may be injurious to health.

An extremely important fact is the amount of food taken. As food should be taken only according to the amount of space inside the stomach, it is a personal measurement. According to Aurveda, half the stomach is meant for food. Half of the remaining half is meant for water and the rest should be for air. The amount of food should be decided, such that the amount will be useful for digestion and absorption of the nutrients. Similarly by taking food in excess of the amount required and not taking the required amount, will cause discomfort to the body. In the long term this will bring about various disease conditions. The amount of food taken to the body should be proportionate to the amount of energy used up by the body. If this does not happen there will be an excess or deficit of energy.

We should next consider the situation of hunger. This too varies from individual to individual. However it is harmful to take food without considering hunger. If a person with less hunger takes even the correct amount of food that is naturally difficult to be digested it may give adverse results. However taking excess of naturally light food will not cause harm. Accordingly it is reasonable to consider the degree of hunger as the primary factor when considering the amount of food.

Selection of food that is suitable or unsuitable according to our physical condition also helps in health conservation. This is why practises like refraining from cool food, when having a cold and refraining from heavy food when having an indigestion are followed. Something that is suitable under normal conditions may be unsuitable when the body conditions change. The suitability and unsuitability of these foods should be decided according to the different ages of individuals and the regions where they live.

A finally important factor is the mental condition. The appetite for food and hunger may increase or decrease according to mental

unrest and tention. Similarly it has been revealed that mental impulses too influence the digestion and absorption of food.

We must be aware of the fact that when taking food we should be in a calm and relaxed manner.

We have understood that health is the most important requirement for life. Similarly it is accepted that happiness in life rests on good health. We realize the value of health only when we or someone close to us fall sick. Health which is a valuable resource we receive with ease but which should be safeguarded with difficulty also is important for a successful life. The greatest threat that is posed on our health today is the unfavourable life styles we are practising. Under these conditions we have understood that in order to safeguard our health, it is a much easier and profitable task to prevent or safeguard ourselves from disease rather than curing diseases.

04. A Fulfilled Life

The subject matter included in this chapter will not only widen your knowledge but will also be useful to you in directing you towards a more "profitable" way of living. Make use of this to enjoy and make your life fruitful rather than to collect knowledge.

What is this happiness?

All of us expect to lead a happy life!



Education



profession



family life

Fig. 4.1 - All these instances could be directed towards happiness.

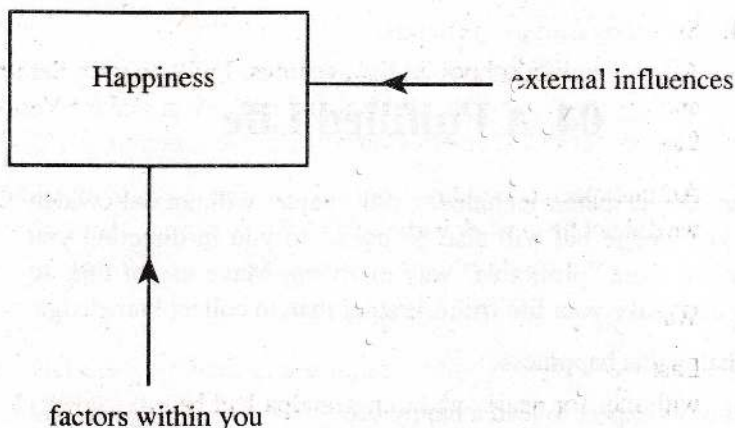


Fig. 4.2 Factors affecting happiness could originate within you or from outside.

Let us now consider a few factors that will further improve your happiness as a grade 9 student.

Things that make me happy

- eg:
1. Reading a story book
 2.
 3.
 4.

How many facts are included in your list?

Let us now read through Sumith's List.

1. New experiences from the television.
I watched a foreign film on the television. It is a story on how our world is invaded by an outside planet.
2. Reading story books.
Read three books during the last month. Got scolded by mother for not studying.
3. Went on a pleasure trip.
Visited uncle's house in Kandy, along with my home people.

4. Spending time with friends.

After attending school, in the evenings, I will go with Sarath and Piyasena to cut the bamboo or 'bata'. Must make a Vesak Lantern for the "Lantern Competition" next month.

5. An unexpected holiday from school. Day before yesterday we did not have work in the school. Some officers came down from Colombo and there was a meeting.
6. Watching an interschool cricket match.
7. Last week my next door grandma and grandpa were talking with me for nearly an hour, grandpa had been a clever carpenter in the village long ago. He even promised to teach me carpentry.

8. Teaching science to my class friends.

I taught science to Suranga and Sarath. They said, they understood what they could not follow when teacher explained.

9. Went to the 'Sunday fair' with father. He entrusted me with, counting money and weighing vegetables.
10. Our school athletic captain spoke to me. He showed me the photos taken at the interschool meets.
11. Planted a Jasmin plant in front of the house. It will look beautiful when it starts flowering. Must make a flower bed also near it.

These show that, many are the instances where Sumith finds happiness in his life. Let's take in, a few of these into our lives too.

Describing further:

Sumith: I like to learn about trees. Last week we went to the sea beach.

Friend: We too go to the beach often.

Sumith: What do you do, when you go there?

Friend: We bathe in the sea. We collect sea shells.

Sumith: That's not all. Next time you go there look at the clouds too. Do you know the different types of clouds?

Friend: We can find out the differences among the plants growing near the sea shore.

Sumith: We can paste the leaves from certain plants in a book. We can use the old exercise books we used last year. We can write a small account of the plants too.

Let's think of more ways of enjoying ourselves when we go to the sea shore next time.

Friend: The area we live is a little far from the sea shore. Therefore we don't get a chance of going there very often.

Sumith: But what a lot of other things can you do when you go there? If there is a land or forest nearby what a lot of things you can do? You can identify different types of birds. You can draw pictures of them!

You can study about the stars from any place in Sri Lanka. Watch the night sky. Can you identify the stars you see?

Happiness from sports.

Students in our class are organising to hold a volleyball match. After finishing the tests we do not have much work too these days. All grades 11, 12 and 13 classes are presenting a team.

The best teams from the initial matches will be selected for the final match. Even though our sports teacher helped us we gained some new experiences by organising the whole series of matches. Those who do not join sports on other days, even played for their sides this time.

The team spirit developed through competitiveness. We came to know new friends through sports.

We can be happy by observing things happening around us.

Samantha, on his way to school, saw the foundation of a large building been laid. By watching this for about ten minutes he gained a vast amount of new experiences.

Samantha: I was watching the machine that had been brought to lay the foundation in that building. There is a special machine in that to dig the soil. The soil that could be dug out by about 100 men within a day could be dug out in one round by that machine. I will ask Saman aiya, what this machine is.

This is not all, Samantha shared his experiences with his sister. 'Sister, come to school with me tomorrow. I will show you a big machine that digs soil'. Thus, no matter in what area you live, you can make your daily life interesting without any cost.

Look brother! a bird is making a nest.

Brother: Ah! those are found everywhere!

Ranjani: No! I was watching for nearly half an hour. The bird was bringing dry banana leaf pieces. See! its now bringing fibre from the coconut husks down the garden!

A curiosity arises in us when we observe various things in our surroundings. Our modes of appreciation too widen by such means.

Experimenting more

There is an old, discarded bicycle in our home. It has rusted, the tyres are flat. The front wheel has come out.

Samantha and his sister are planning to repair it during the school vacation.

Samantha: First we cleaned the bicycle with a piece of cloth. We fixed the chain that had come out in it. Then we oiled

it, We fixed the wheel that had come out. Now we have only to inflate the tyre.

Though Samantha can ride the bicycle his sister cannot do it. Therefore teaching cycling to the sister is also an interesting thing for Samantha.

It is more interesting to learn through ones own experiences more than learning from books. Likewise teaching what you know, to another person is also interesting.

Relationships with others.

Can you recall an instance, where the class teacher blamed a student?

Have you faced such instances? How did you react to such an instance?

You are a useless child.
A fool

Is this the way?
Did you see how Nimal
Got scolded today let's
Call him fool' here after

Or is it this way?
Today the teacher scolded Nimal, isn't it?
Don't take it serious. Study well next time and get.
more marks

What happened to Nimal's self esteem in these two ways of reacting?

A wrong done by others should be corrected such that their self esteem is not hindered.

Nimal! you are a very
bad child. You always
copy the home work from
someone.

Nimal don't get angry.
You did a wrong thing.
Tomorrow do your work
by yourself and show.

Appreciating others abilities.

Teacher! a poem written by Nimal has appeared in the papers.

He is clever at composing poetry.

How do we take decisions?

A big commotion in the class. The students have become restless! Yesterday in the school bus, some other students from another school have taken our seats. Let's do a fine thing today.

Do you see the disadvantages resulting from this type of response?

1.
2.
3.

These disadvantages may be listed as follows:

Treating children not belonging to our clique as outsiders.

Often we treat those who do not belong to our clique in a different way. This difference is seen even among cliques of school friends. There are divisions among students in certain classes. There is a big competition among these groups. They even do not associate much with those belonging to other groups. We see them as different to us. Treating those who do not belong to one's religion and race, as outsiders is also a similar action, isn't it?

- Forgetting the fact that the other students who got into the bus have the same right as us to do so.
- These students getting hurt about this behaviour.
- From then onwards we get distanced from them.
- We lose our nice, good natured qualities.

Sriya does not agree on harassing children of other schools. She thought that, unnecessary conflicts arise by behaving so. However she did not show her disliking during that particular instance.

The reason for this

- * She had a fear to go against a decision taken by the students in the class.
- * If she went against their decision, she feared that she would get 'cornered' in the class.
- * She thought she may get humiliated by the rest of the class.

Therefore Sriya kept quiet during this instance.

Like in Sriya's case, have others influenced you on any occasion to involve yourself in something you disagree? Think of any such instance.

How did you act during such an instance?

Let us take another example.

A new student joined our class during the middle of the term. Kulatunge studied in a Maha Vidyalaya before. He had to change his school as his parents were transferred.

Since the day Kulatunge joined our class, a certain clique in our class, started harassing him in various ways. Although only a few students in the class really were involved in this, the others in the class contributed in this by laughing at these harassments and so on. No one showed an interest to talk with Kulatunge.

Amitha was against this." Don't do so. It is not a great thing for all of you to get together and harass a single person. I will talk with him. It is wrong to isolate him like that". What happened next?

Those in the class who did not join in the teasing also started making friends with Kulatunge. The clique that started harassing Kulatunge at the beginning felt embarrassed. After a few days they stopped harassing Kulatunge.

What is the difference you observe in the two incidents we presented.

Influences that affect decision making

Last week Piyal went on a trip with his friends. A few friends forced Piyal to take liquor during the trip. Piyal was very curious about liquor.

He drank the liquor with much difficulty. later he developed giddiness.

Many who consume liquor for the first time undergo such experiences. However Piyal describes his experiences to his friends in a different way.

"Haven't you taken liquor? You must experience to see"

Why is this difference between what you feel and what you express?

To a person like Piyal who is not used to taking liquor often, the influence of the chemical is something unpleasant. This is why liquor is mixed with other cool drinks, diluted and taken little by little.

After some time, people get used to the uncomfortable feeling from the influence of the chemical.

Many who feel the uncomfot during liquor consumption are reluctant to reveal it fearing, they will get ridiculed by others.

If so how did Piyal develop a curiosity, concerning liquor?

to show
adulthood

the image
formed on
consumption

being accepted by
others in a group

being under the impression
that girls would get attracted

From where do we get these beliefs

The attraction of the youth, to the use of liquor and cigarettes is not something that happens spontaneously. It is something done by the manufacturers in a very intricately planned, manner, for earning an income.

- observe in the next advertisement you see as to what tactics have been use to attract your attention to the use of cigarettes.
- In addition to advertisements, be observant about instances where the use of liquor has been displayed in an attractive manner in the mass media daily.
- See the way, people who consume liquor describe liquor, while talking. Even the tone of their speech show that they are engaged in an enjoyable process! Why is it necessary to do this?

Findout whether there are other instances where they use us as a source of attraction to advertise liquor consumption.

Thus who are the people who gain advantage by showing that the use of liquor in our daily life is a great thing?

5. Our Fascinating Body

You are now ready to read this chapter. Stop for a moment. Now think about your body. Have you thought about its uniqueness before?

- You can think about various things,
- Do required things in the required way.
- Can act instantly to protect from accidents.
- Can adjust to the temperature of the surrounding environment.
- Can express what comes to the mind.

Can see things that are at a distance or close by. You can run, jump and dance. These are just a few from the thousand things your amazing body could do.

Considering each organ of the body the things they could do and the manner in which the body is designed to perform these things is amazing isn't it?

Today while you were in the school, in the bus or on the road you may have seen various people. There is no difficulty in differentiating the men and the women from among them. Similarly there are certain factors that help us to identify people of different races. Eventhough people differ in their external characters the way their body is 'constructed' is the same. We are able to identify people living in different regions, according to their skin colour, shape of the face and the nature of the hair. The smallest unit comprising this fascinating body is known as the cell. A large number of cells together form a tissue. A large number of tissues form an organ. Organs together form a system. The human body consist of a number of systems. These systems are designed to perform various functions. However they do not function singly. A number of systems work together during a particular activity. For example, think of a

person running to get into a bus. During this process, how many systems function in your body?

We will now investigate more details about the amazing systems in this fascinating body.

The skin is fascinating

The skin is an organ in your body. The skin has got its colour, due to the pigment, melanin. The colour of the skin, varies as, very fair, fair, brown and black, according to the decrease and increase of the amount of melanin in it. The skin of people living in regions exposed to strong sunlight is of a dark shade. Similarly the skin of those living in areas that are not exposed to sunlight is of a fair complexion. Thus, melanin that causes the changes in skin colour, protects us from the harmful ultra violet rays in sunlight. This skin colour is transferred from generation to generation by the genes.

The skin performs many other important functions.

- * Protects the internal organs from external harm.
- * Prevents the entry of microorganisms.
- * Protects the amount of water contained in the body.
- * Controls the body temperature.
- * Secures the shape of the body.
- * Protects you from the ultra violet rays of the sun.
- * Sensitive to the external environment.
- * Capable of producing vitamin D.

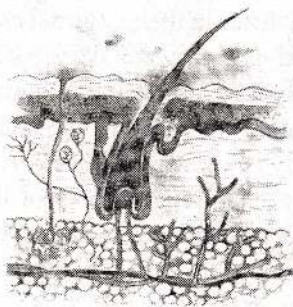


Fig 5.1 - A section of the human skin

The way the skin is constructed to perform each of these functions most efficiently is indeed amazing

Can you remember what happened when you felt cold? The hair in the skin straighten and sometimes shivering takes place. Similarly during a hot time, sweating increases. By this means, it is possible to maintain the body temperature constant.

The various parts of the skin are arranged in a specialised manner. Observe your palm. It is different from the other places of the body. There are no hairs on the skin of your palm. A large number of lines are seen on the palm. Think of the manner your palm is adapted to grasp something. Likewise with your finger tips you can touch and feel even a small thing. The nails that protect the tip of the fingers safeguard their sensitivity further. The skin on the soles of the feet are even more thick. It is provided with additional strength that protects it from harmful substances in the ground.

This fascinating quality of the skin could be maintained by keeping the skin clean and safeguarding it from injury.

The hair is an important feature of the skin. The hair in the head is a specialised covering of the skin. They are formed out of keratin. Like in the case of the skin, the hair of people belonging to certain races is also specific to them. Curly hair is specific to Africans.

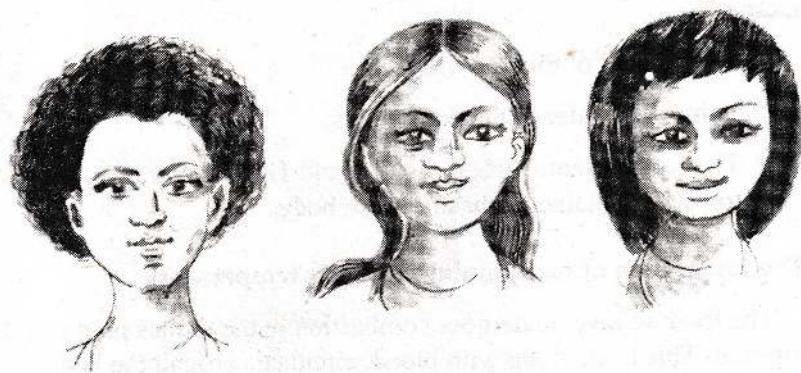


Fig 5.2 -Variations in the hair

A hair grows about 0.33 mm (0.01 ins) in length during a day. Most hair may grow to a length of about 24-30 inches (600-700 mm) in length. Have you counted the hair in your head? It is a difficult task. However it has been found that there are about 100,000 hairs in our head. Do you know that you loose about 40-60 hairs from your head in a day?

Homeostasis

The environment we live in is continuously subjected to changes. When we consider the temperature in the environment, you may know that within the country itself the temperature vary in the different regions. There is a vast difference in the temperature in the Nuwara Eliya and Anuradhapura districts. Similarly in countries of the world where snow forms such as in Switzerland the temperature during certain times of the year is less than 0°C . Likewise in the Middle East countries the temperature is often above 40°C However an amazing thing is that, in whatever environment they live the body temperature of man is maintained in a certain constant range. This temperature range is between 36.3°C to 37.1°C .

Maintenance of the internal environment unchanged, within the human body, is known as homeostasis. The body uses various devices to function with maximum efficiency, without undergoing changes according to the external environmental factors.

Example

- * The amount of glucose in blood.
- * Volume of water in the body fluids.
- * The salt content, carbon dioxide and H^+ concentration etc. too are maintained constant in the body.

The fascination of maintaining the body temperature

The food we take, undergoes combustion in the tissues producing heat. This heat, along with blood, circulates around the body, maintaining the body temperature.

What do you do when the environment warms up? You switch on the fan when you start sweating, or else you start fanning yourself or you move to a place where there is a blowing. By this means, sweating will stop and your body will cool. Have you thought of as to what happens during these instances?

A warm environment too increases the rate of combustion in the tissues. Also the blood vessels in the skin, dilate and makes the warm blood to pass through them. By this means heat is given out from the body by radiation. This will make you sweat more. Evaporation of sweat too cools the body.

Do you remember what happened on a rainy day when it became very cold? The hair in your skin would have straightened, sometimes you may have even shivered. When the external environment cools, the blood vessels in the skin, narrows further and the amount of blood flowing through them is reduced. This reduces the giving out of heat.

The muscles in the body too start functioning producing additional heat. All these happen to keep your body temperature unchanged. If you stay a long time in the water or in the paddy field, the skin on the tips of your fingers may shrivel and become benumbed. This happens due to the blood supply to the finger tips getting reduced to a great extent. All these are actions taking place to control the temperature.

During on infection or other illness, the parts that control the temperature of the brain do not function properly. As a result you develop fever.

Regulation of water

Two thirds ($\frac{2}{3}$) of your body weight is water. A major part of this water is within the cells and about $\frac{1}{4}$ of this is found within the tissues and in the blood.

It is very important that the amount of water in the body is regulated. Water does not enter through the skin. Water enters through the food and drinks taken from the mouth. Do you know that wa-

ter 'leaves' our body during many of our activities? Water is often lost from the body through sweat, urine, faeces, and during expiration. Of this water exactly half is lost through urine. The amount of water lost differ according to the environment we live in and according to the activities we carry out. During a day normally about 2-3 litres of water may be lost.

Our body also acts to maintain the volume of water in the body constant. Think for a while. More sweat is given out from the body on hot days. Therefore the passing out of urine is less. We become thirsty too. We need to drink water often. Sweating is less on rainy days, However the passing of urine is more, There is no necessity to drink excess water.

The kidneys have to do many things in order to regulate the water in the body. The excess water, and impurities are removed by a filter in the kidneys. Urine contains 96% water. The rest is salts and urea. When more water is lost from other places of the body the amount of water lost through urine is less.

If due to some reason the amount of water lost from the body increases to a great extent, such as during diarrhoea and excessive vomiting, the amount of water in the body decreases to a great extent and dehydration may result. As a result, the tissues and nerves of the body may get, destroyed resulting even in death. This is why during excessive loss of water from the body, it is necessary to take more water and other drinks.

Regulation of glucose.

You know that the energy required by the body is obtained by the combustion of glucose within the cells. Therefore it is very essential that the amount of glucose in the body be controlled. Food containing carbohydrate is digested and the glucose formed during this process is absorbed into the blood. Although this glucose dissolves in the blood and circulates throughout the body, all this is not made use of at once. A part of it is stored as glycogen in the liver and body muscles. They can be made use of, when required. In patients suffering from diabetes, as the glucose content in the

blood increases, the glucose filters from the kidneys and passes out with the urine. This fascinating process during which the discharge of glucose with urine is regulated, is carried out by a hormone called insulin produced by the pancreas and glucagon. If the production of insulin by the Islets of Langerhans in the pancreas is brought to a standstill this regulation of glucose too comes to complete standstill. The disease known as diabetes, arises due to this condition.

Proper control of the diet, control of the weight and regular exercises will protect you from diseases like diabetes.

Protection of the body. How fascinating it is!

Do you remember, recently when the others in your house had a cold you did not get it. How did this happen, Didn't you think about it? Many amazing things take place in our body constantly in order to safeguard us from diseases. From the war that takes place in your body to safeguard from disease the body often wins. However if the disease causing agent is powerful or if the body is weak we may lose this war and become sick.

The skin is the main protective measure of the body. The skin prevents the entry of many disease causing agents. However when there is an abrasion or when the skin is wounded or pierced, disease causing micro-organisms may enter the body.

Our eyelids prevent something from entering the eye. Similarly the tears in the eye can, destroy and wash off many micro organisms.

The lymph tissue in our throat can arrest the entry of many micro organisms entering through the mouth. If a particular disease causing agent travels up to the stomach, the acids contained in the stomach will destroy it. Secretions such as the wax in the ear, the phlegm in the nose, vaginal secretions, the saliva in the mouth and so on are amazing things that act to prevent the entry of germs through openings in the body.

If a particular disease causing agent defeats these external protective agents and enter the blood, there are many ways of defeating this too. If a certain disease causing agent enters through the skin, respiratory system or digestive system the monocytes in the white blood corpuscles will move towards this and ingest or eat up and destroy the micro organisms. The lymphocytes in the white corpuscles can produce antibodies that fight against these micro-organisms. These antibodies are specific to that particular micro-organism. Hence the body has the ability to produce separate antibodies specific to a particular micro organism. These antibodies could exist in the body for a long time, and if the particular micro-organism enter the body again these antibodies could destroy them and protect the body. This is known as immunization

Do you remember, vaccinations been given when you were small in order to protect you from fatal diseases? Observe whether there is a small scar in the upper region of your left arm. This is the scar of the BCG vaccination given to you on the day you were born. This protects you against tuberculosis. Similarly other vaccinations such as the triple, polio, and measles would have been given to you to protect you from a number of fatal diseases. Isn't this ability possessed by your body fascinating?

Have you heard of a dangerous disease causing agent that destroy the immunity system that protect your body from diseases? About the HIV (Human Immunodeficiency Virus). It is this virus that causes the deadly disease Aids.

You may have heard of the manner in which HIV virus enter the body. HIV enter the body through sexual relationships with an infected person, by the mixing of infected blood and across the placenta of an infected mother.

Once HIV enters the body it joins the lymphocytes in the white blood cells and not only arrest their activity but also start growing in them. As a result the immunity system gets destroyed gradually and HIV starts multiplying. When about 75% -80% of the immunity system gets destroyed the disease resistance ability

is lost and various infections or cancer conditions may arise. Such a condition is known as Aids. A treatment for this condition has still not been found. Therefore it is fatal.

The immunity system helps in protecting our body against many diseases. Safeguarding this system is therefore a vital thing. Nutritious food, sufficient rest, unpolluted air, a clean environment, and good personal hygiene as well as a healthy sexual relationship are important in this regard.

Hormones - Another fascinating aspect

There is a group of chemical substances capable of regulating many activities in the human body. These substances are known as hormones. These hormones are produced in glands. Unlike the secretions of other glands the secretions that are given out from these glands are not discharged through tubes. Hence they are also known as ductless glands. The hormones produced in these glands are added to the blood and traverse through out the body. The manner in which these glands act to produce hormones as required is amazing. When the amount of hormone in the blood decreases below the required amount its production resumes. A few, major glands produce hormones in the body. They are the,

pituitary gland

thyroid gland

parathyroid

adrenal gland

pancreas

ovaries

testes

Let us consider the activity of some of these glands.

The pituitary gland is the main ductless gland in the body. It produces a number of hormones. It also stimulates and regulates

the production of hormones by other glands. The growth hormone is one important hormone produced by it.

The growth hormone traverses, throughout the body and maintains the functioning of the tissues. As the body grows, during adolescence more growth hormones are produced. If the production and functioning of this hormone decreases in an individual he will become short and if it increases he may become unusually big like a giant.

A hormone secreted by the pituitary gland acts on the kidneys, regulating the water in the body by decreasing or increasing the amount of urine leaving the body. Developing a thirst, when the water content in the body decreases is an indication of this. All this is brought about by the above mentioned hormone.

The production of hormones that influence the functioning of the ovaries and testes too is regulated by the pituitary. When the hormone lessen the pituitary gives the signal for its production. Similarly when the amount of hormone in the blood increases a signal is given by the pituitary to reduce it. Isn't this ability to regulate as required fascinating? We will consider the functioning of another ductless gland the thyroid gland.

The thyroid gland is essential for the functioning of the cells in the body. This gland has the ability of absorbing the mineral Iodine, present in the blood. The hormone thyroxine is produced in this gland using this Iodine. This hormone is very important in the growth of the body. This gland has the ability of removing Iodine from the body if it is contained in excess in the food and also making maximum use of it if it is contained in lesser amounts. During adolescence the growth of the body is rapid and more thyroxine is necessary. If the food we eat contain a lesser amount of Iodine the thyroid gland, takes a greater effort to make maximum use of the Iodine available. As a result of this the gland enlarges. It is this condition that is known as goitre.



Fig 5.3 A school girl with goitre

A main cause of goitre is iodine deficiency. The food and water we take, do not contain the sufficient iodine required for the proper growth of the body. Hence it is essential that we add iodised salt to our diet.

When we discussed about the regulation of glucose, you may remember mentioning that insulin produced by the pancreas regulates the glucose content of the blood. The hormones produced by the pancreas are important in the supply of the required amount of glucose from our food to the body, the storage of the excess glucose and making use of it when required. The reduction in the glucose content of the blood is indicated by hunger.

Do you remember an instant you got excited? The day a dog chased you, barking behind you. Do you remember? You got so scared that the thought of it makes your heart beat! The hair in your body 'stood up'! You started sweating! Do you know how all this happened, This is also an amazing action of hormones. During an emergency, during fear, sorrow, anger, during a happy, moment or during an exam the message is given to the adrenal glands and immediately the hormone adrenaline is produced. Providing the

instant energy we require, increasing the respiratory rate to provide the oxygen necessary for instant action, increasing the heart beat rate to speed up blood circulation are carried out by the hormone adrenaline. An additional impulse and energy required to face these situations are provided and you are safeguarded by this hormone.

Think for a while, how you were before 5-6 years? You are now an energetic young man. or a young woman, grown tall and beautiful. You seem to be more cheerful than during those days. How do these things happen? There seems to be no end to these fascinating activities carried out by hormones. As your body gradually grows, the stimulating hormones produced by the pituitary gives the message to the testis sacs to produce the hormone, testosterone and to the ovaries to produce the hormone oestrogen.

During puberty in boys, certain physical changes take place. In girls, the first menstruation is known as "attainment of age". Along with this they become reproductively mature and gets the ability to produce a child.

Menstruation that occur in the form of a cycle, the development of an embryo, child birth, the contraction of the uterus after child birth, lactation are all regulated by hormones.

Hormones are the main chemical substances that make our life function. There seems to be no end to the fascinating actions they perform.

How fascinating is your mind?

Recall the manner you spent the time yesterday. What a lot of things happened during that 24 hours? Some of the things were deliberately done by you. Other things may have happened without your knowledge. Our mind is always at work. No one ever has been able to say where the mind is. However what you say and do, what you think of and what you wish for, the way you live, your relationship with others, all these take place according to the functioning of your mind.

If your mind is unruffled you can do many things efficiently. If your mind is ruffled, restless, hurt and disturbed a different thing happens. When you loose your temper, you are not conscious of what you do or what you say. Tears come to our eyes, when we are overjoyed. We cry when we are sad. When faced with a problem we cannot cope with, so many a times we have been thinking, with the hand on the forehead. All this happens when you allow your mind to control yourself. The mind is something we cannot see, but the face reveals what happens in our mind. How ugly is the face of a person who is angry? A happy face is pleasant looking.

Constant mental stress will affect ones health adversely. Living in an environment subjected to constant change, amidst people having diverse views and ideas, often you have to face various challenges. If only you can train yourself to look at these with equanimity (upekkha) or a balanced frame of mind, you will be able to lead a happy life. Isn't it fascinating that for this purpose you are able to train your mind to overcome constant anger, to be conscious of the happiness of others, and ones ownself, to maintain favourable relationships, and to lead an independent life? Inculcating the quality of patience, being considerate not only about oneself but about others too and inculcating the habit of looking at loss and gain, insult and criticism, sorrow and comfort, rich and poor with equanimity will make you a happy person to a great extent.

Your ability to think, and the ability to do what you thought of, the ability of not doing other things deliberately is a fascinating quality of your mind. Smoking, and consumption of liquor and drugs may confuse your mind and thereby push you towards frustration in the society. Refraining oneself from liquor and drugs may help one to safeguard this fascinating quality throughout.

In order to safeguard this fascinating quality to the maximum, it is necessary to recognise the tendencies that push a person to a frustrating situation in the society. Confusing, ones mind, by things such as the use of liquor and drugs, adverse qualities such as anger, jealousy, hatred and severe craving are examples of such instances.

6. Growth Changes in the Body

In this chapter we will discuss about the physical and psycho-social development and changes that take place from birth to infancy, childhood to adolescence and thence from adulthood to old age.

What is physical development?

Increase in height and weight, increase in size of organs, increase in the functioning of organs and the increase in complexity of organs is known as physical development.

What is psycho-social development?

Development or growth does not mean, physical development only. Maturity suitable for age should also be taken into consideration, during development. The proper functioning of organs will reveal as to how mature they are. The brain is the organ that reveals the process of attainment of maturity or development.

Accordingly, further advancement of activities according to different age limits, responding to senses, developing the ability to take decisions, maintaining suitable relationships with the members of the family and with others in the society and the gradual transformation into an independent individual are features showing psycho-social development.

How can one measure, physical and psycho-social development? What are the factors responsible for psycho social development?

Physical development

The physical growth of a person is shown by the increase in height and weight, by the increase in size of the organs and by the further increase in functioning of these organs.

Physical growth during infancy and childhood.

The normal birth weight of an infant in our country is 2.8 Kg. A child with a birth weight less than 2.8 kg is considered to be underweight. The birth of a child with a low birth weight is due to the child in the mothers womb not receiving the required amount of sufficient nutrition or due to the mother falling sick during pregnancy.

If the increase in weight after birth takes place in the proper way, we can expect the child's weight to double at the end of 5 months, and increase of the birth weight three fold at the end of the first year.

The child health development record, could be made use of to observe whether the physical growth of a small child takes place in the proper way. The expected increase in weight, should go parallel to the lines in the development record. When the weight is measured and recorded regularly and if a progress or increase in the weight is not shown or a decrease in the weight is shown parallel to the guidelines, it indicates a decline in the physical development of the child.

The child health development record could be made use of to observe whether the physical development of a child from birth to the age of 3 years takes place in the proper manner.

The rate of physical development of a child differ according to age. Within the first year after the birth of a child a very rapid physical development takes place in the child. After about 3 years of age the physical development rate decrease gradually. A rapid physical development as in the first year of the child takes place again during adolescence.

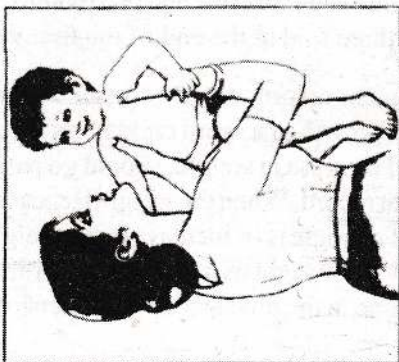
Change in shape of the body:

The length and size of the various organs and parts of the body change according to the rate of development and age.

For example the size of the head of an infant is large in relation to the total length of the body. This condition changes with the progress in development.

Measurement of the psycho social development.

The psycho social development of a small child is measured by observing whether a few of the striking activities (steps) expected to take place during each age limit are performed during the correct age limit. The child health development records could be made use for this.

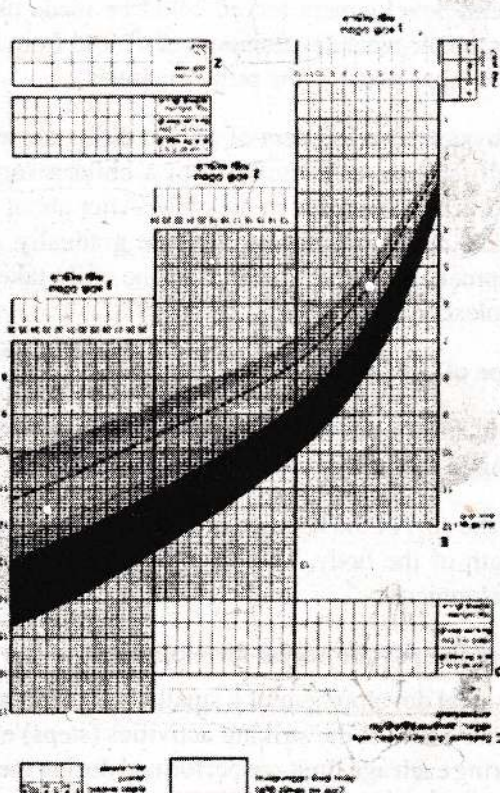


දරුවන්ගේ සෞඛ්‍යය වර්ධනය කරවීම
 දරුවන්ගේ සෞඛ්‍යය වර්ධනය කරවීම
 CHILD HEALTH DEVELOPMENT REFORD



1965-1966

මෙම පොතේ මගින් දරුවන්ගේ සෞඛ්‍යය වර්ධනය කරවීම සඳහා අවශ්‍ය වන පියවරුන් පිළිබඳව දැනුම ලබා දීමට අරමුණු කර ඇත. මෙය සෞඛ්‍ය සේවකයන් සඳහා පමණක් නොව, සියලුම දරුවන්ගේ සෞඛ්‍යය වර්ධනය කරවීමට අවශ්‍ය වන පියවරුන් පිළිබඳව දැනුම ලබා දීමට අරමුණු කර ඇත.



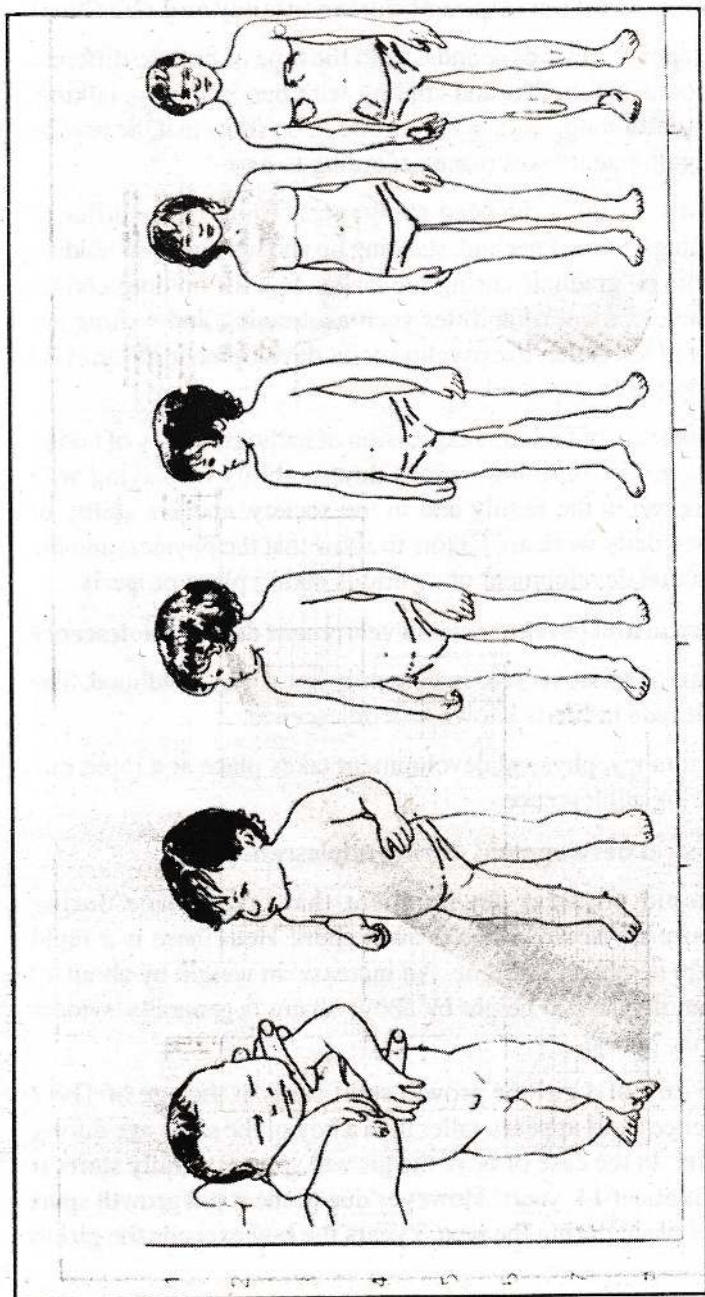


Fig. 6.1 Child health development record.
The change in proportion of the size of the parts of the body from birth to adolescence

The psycho social development during infancy and childhood

The response towards sounds, from the time of birth to different ages, recognising mother and smiling with her, imitating, talking, singing, questioning, understanding and so on show that the psycho social development takes place according to age.

Similarly, keeping the head straight according to the different ages, turning, sitting, kneeling, standing up and walking also holding certain things, gradually using the finger tips for holding certain things, development of abilities such as drawing and writing are instances to show that the psycho social development of the child is taking place as expected.

Development of feelings, expression of feelings, ability of taking decisions, ability of doing various things, ability of playing with other children in the family and in the society, and the ability of doing ones daily work are factors to show that the physical and the psycho social development of a child is taking place properly.

The physical and psycho social development during adolescence

The age of about 10 year is generally known as childhood. The second decade in life is known as a dolescence.

After infancy, physical development takes place at a rapid rate again during adolescence.

The physical development during adolescence

The rapid physical development that takes place during adolescence is known as the growth spurt. Here there is a rapid increase in height and weight. An increase in weight by about 10 kg. and an increase in height by about 30 cm is generally evident during this period.

In the case of a girl the growth spurt starts at the age of 11-12 years. Hence a girl appears taller than a boy of the same age during this period. In the case of boys the growth spurt generally starts at the age of about 14 years. However due to the rapid growth spurt that takes place during the next 3 years the boy exceeds the girl in height.

Change in shape

During the increase in height and weight that take place during adolescence, first the legs increase in length, The increase in length of the trunk takes places subsequently. The broadening of the chest and shoulders in boys take place after this. Accordingly, generally their trousers shorten first and later their shirts tighten.

During adolescence in addition to the increase in height and weight, a striking development, takes place in their sex organs. We describe this as the appearance of secondary sexual characters. The raising of the breasts and widening of the hips, in the case of girls and the appearance of the beard and change in voice in the boys are a few of such secondary sexual characters.

The growth spurt that occur during adolescence, generally appear before the development of secondary sexual characters. Accordingly in girls, the height starts increasing before the breasts raise and the hips widen.

Physical changes occurring during adolescence

Females

- * Increase in height and weight
- * Breasts enlarge
- * Hips widen
- * Hair appear; in the arm pits and around the sex organs
- * Excessive sweating
- * Thighs become fat
- * Enlargement of the sex organs
- * Sometimes pimples appear on the face
- * Formation of vaginal Secretions
- * commencement of the menstrual cycle

Males

- * Increase in height and weight
- * Growth of muscles.
- * Shoulders widen
- * Hair appear in the arm pits around the sex organs and in the chest.
- * Excessive sweating
- * Larynx protrudes.
- * Voice roughens or becomes hoarse
- * Increase in size of the sex organs (testes and penis)
- * appearance of pimples on the face
- * commencement of the discharge of sperms.

The development of children step by step

1



Makes sounds

2



Turns on the stomach and raises the head

3



Recognises the mother

4



Prefers certain food to others

5



Stops when asked not to do something

6



Stands by himself

7



Mentions the name while talking

8



Collects certain things together and keeps them separately.

9



Plays imaginary games
like running a boutique
or making house

13



Relates stories

10



Wears by himself

14



Plays with movements

11



Says what he or she is doing

15



Completes an activity started by
him or her.

12



Show gestures using hands and face

16



Goes to school

Fig. 6.3 - Development of children step by step.

How does the development of the skeleton take place?

The human skeleton is formed of cartilage at first which later turns into bone. Some of these skeletal parts are in the cartilage stage even at birth.

The neck of a new born baby is short; the chest is round. As the baby grows gradually, the neck elongates, and the chest broadens and flattens, the hands and legs lengthen. As the cartilagenous part in the skeletal parts get displaced by bone cells, the bone development does not take place further.

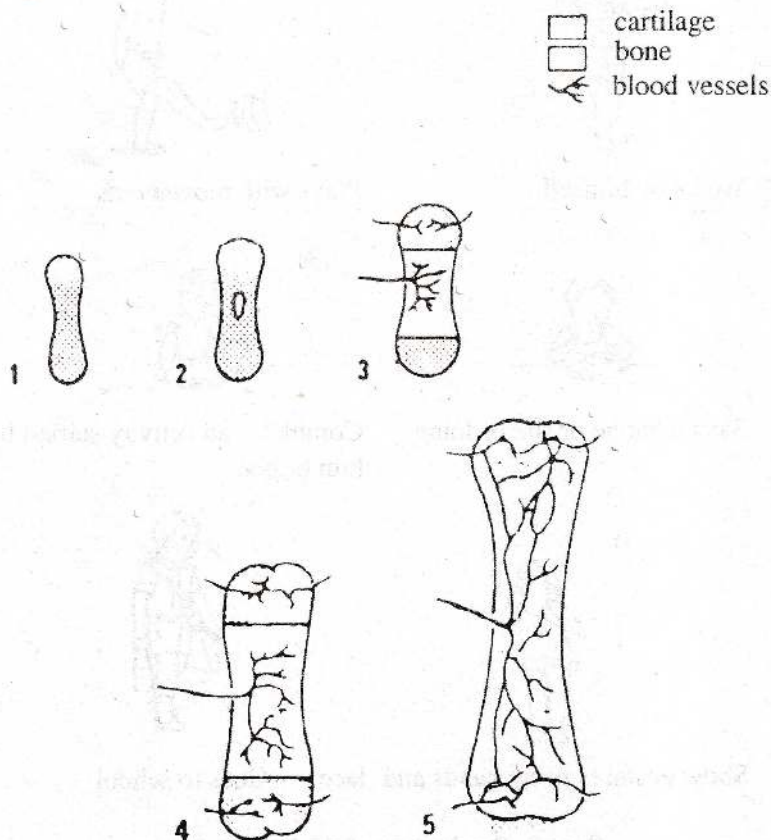


Fig 6.4 Stages in bone development

1. Cartilage
2. Formation of a small calcified part (bone)
3. The calcified part being used up, with the bringing in of bone cells by the blood vessels.
4. Replacement of the cartilaginous part at the two ends by the bone cells.
5. With the joining of the bone parts at the two ends along with the bone part in the centre (replacement of all the cartilage with bone cells) bone development does not take place further.

It takes about 25 years for this process to be completed.

How is growth controlled?

Growth is controlled by a number of hormones. The growth hormone which is one of the most important among these is secreted by the pituitary gland situated at the bottom of the skull. A child whose growth hormone secretion is low will be smaller than other children of the same age. During such an instance, development could be brought back to normal by giving the growth hormone to the affected child in advance.

There are a large number of other hormones that influence growth. The thyroid hormone or thyroxine secreted by the thyroid gland in the neck is one among these. Growth becomes restricted when the secretion of the thyroid hormone decreases. Proper development or growth could be resumed by bringing the secretion of the hormone back to normal in time.

The secretion of the pituitary and sex hormones are responsible for the appearance of secondary sexual characters during adolescence.

Not receiving proper nutrition and being subjected to diseases are among the other factors that influence, the retardation of maximum growth characters inherited from parents too influence the size of the body. It has been found that the sensations, love,

affection, feelings etc. received from ones environment too influence growth.

The psycho social changes during adolescence

- * Creative abilities develop. If opportunities are given to them they will display their aesthetic and technical abilities.
- * Problem solving and reasoning abilities develop¹/mathematical abilities develop further.
- * Gradually develops potential for the job opportunities and outside activities that would be useful for oneself.

Emotional development

- * Shows an interest in values
- * Debates or argues about the independent and just society.
- * Rises against injustice and unfairness.
- * Attraction towards those of the opposite sex and the preference to talk and associate with them increases.
- * Thinks that the others attention is drawn towards him or her.
- * Shows an extra interest in his or her appearance and compares himself or herself with others
- * Considers even a small defeat as a very serious thing.
- * An awakening of sexual feelings take place.

Personality Development

- * The relationship that existed with the parents and other family members change. Starts building up relationships with the peers
- * Builds up a personal identity
- * Not ready to accept the views of adults in the way they are presented.

It is important that the adolescents, possess a correct understanding about the physical and psycho social changes that take palce during adolescence. It is important to understand that

the physical changes mentioned above, do not take place to the same extent. When analysing the problems existing in this regard it is evident that there are misconceptions and myths especially with regard to the physical changes that take place during adolescence.

It is natural that those in their adolescence, pay more attention towards their external appearance. However it is only a very few people that show satisfaction with regard to their looks or appearance. They should realize that it is, useless comparing oneself with another or repenting over these.

Every individual is unique. It is important that one identifies the abilities, strengths, limits, emotions, and individual relationships within oneself. Through these one can build up ones image. By realizing ones abilities, strengths and values and understanding that through these he or she could be a useful member to the society, self esteem will be built up in him or her. However one should realize that it would be of no use, trying to compare these abilities with those of others. One should realize that what is to be compared is ones earlier situation with the present one.

Physical and psycho social changes during old age.

The life expectancy period of man is gradually increasing. By the year 2000 about 10% the population in our country would have been at the age of 65 years or more.

The process of aging commences from the day we are born. However many feel that they start aging only after the age of forty. The rate of aging may differ from individual to individual according to heredity and life pattern.

Changes that occur in the body with aging.

1. External appearance of the body

Changes occur in the external appearance of the face and body due to the gradual weakening of the bones, reduction in elasticity of

the skin, dryness of the skin and reduction in the fat content beneath the skin and so on. The skin shrivels. Hair turns grey as the pigment melanin is no longer produced in the hair.

2. Bones, muscles and joints

Due to the reduction in cartilage in the vertebral column and the gradual weakening of the muscles, the vertebral column cannot be kept straight. As a result the body shortens. The cartilage in the joints solidifies and starts degenerating resulting in joint aches. The rate of absorption of calcium from the bones is less than the rate at which calcium is deposited. As a result the bones get thinner and become brittle

3. Internal organs

Due to restriction of the expansion of the rib cage during inspiration it cannot hold the maximum possible amount of air. The size and functioning of organs such as the liver, heart and kidneys, is reduced.

4. Blood vessels.

The elasticity of the blood vessels is reduced and they become thickened. As a result conditions such as high blood pressure arise.

5. Brain, nerves and communication.

The brain cells decrease in number. This results in the gradual reduction in the retention of memory. The speed at which reflex actions take place is reduced. The senses of hearing, sight, taste, touch and smell also gradually weaken

6. Hormone production.

The production of the ova by the ovaries and the production of the female sex hormone is reduced gradually until it stops completely. Accordingly by the age of 45-49 years the ability of bearing children ceases in the case of women. Similarly, although the production of the male sex hormone testosterone produced by the testis is reduced

it does not stop completely. In men though there is a reduction in quantity, in the production of sperms with age they are produced throughout the lifetime.

7. Some common disabilities during old age.

Diseases related to the heart and lungs, bone fractures (caused by slipping, falling) joint aches, cancer, difficulty in hearing and poor eye sight are some of these. Not having any duties to perform in the society, negligence by the children may result in mental agony and loneliness.

8. Mental and physical wellbeing during old age

i. For physical wellbeing

The rate of growing weak could be reduced by controlling food taking steps to reduce tension, and by regular exercises. Medicines could be taken for joint aches, and the weight of the body could be reduced by controlling the diet. If the eye sight has weakened due to the reduction in the transparency of the lens of the eye, the sight could be improved by cataract surgery. If suffering from diabetes and high blood pressure these should be controlled by food and medicine. It is important to be careful about accidents when going about in the house and when travelling.

ii. For mental wellbeing

Listening to the radio, watching television, reading the news paper, books and magazines may awaken the mind during old age. Very often, mental satisfaction could be obtained by spending more time with the grand children, relating stories to them and playing with them.

Maintaining a close relationship with friends, relations and neighbours and involving in social activities will help in spending the old age productively and with contentment. Old age could be spent amidst love and affection, by helping the children in their work, indulging in friendly conversations

with them, respecting their views and ability in taking decisions, advising and guiding them when necessary.

By maintaining the physical and mental health during old age one will be able to continue to do his or her work, over a long period of time.

7. Fulfilling Our Nutrition Requirements

Let us find out as to what factors are responsible, in making man follow various food patterns, when fulfilling his necessity for food which is a basic human need.

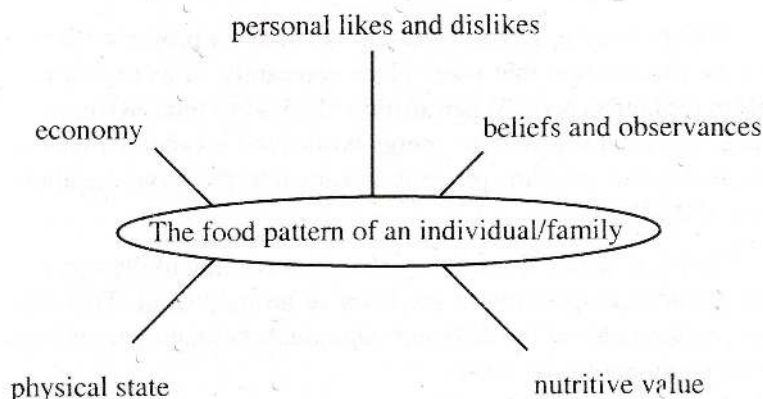


Fig 7.1 - Reasons for man's different food habits.

It has been revealed that food is not only a basic human requirement but that the nutrition of a person has a great influence on the healthy wellbeing of that person.

The risk of being subjected to conditions such as heart diseases, cancer, diabetes and high blood pressure due to obesity is greater than before. Although our life style has changed with technological development it is useful to investigate as to whether we have changed our food pattern accordingly.

It is wise to take steps to develop our knowledge, skills and attitudes necessary to adjust our food habits in order to lead a healthy life.

Man also has the ability to control hunger and also to control the liking he has towards various food. These fascinating processes can be explained by bio-chemical principles.

Hunger, develops when the sensory centres situated in the region known as the hypothalamus in the brain gets stimulated. When the amount of food consumed, is sufficient the centre of satisfaction in the brain controls the amount of food to be consumed. Many people can control the consumption of food, even without the thought of it and such that it suits one's energy requirement without causing any reduction of energy or without any hypernutrition taking place. The appetite for food may differ according to the nature and taste of food as well as due to various social and mental reasons.

Energy is necessary to maintain the body in proper condition during the reaction that takes place constantly so as to maintain life in the human body. When an individual is in a relaxed (inactive) state, the speed at which the energy is obtained in order to maintain the biological activities properly is known as the basal metabolic rate (BMR)

The basal metabolic rate may change according to the age, sex, weight and composition of the body of an individual. Therefore the requirements of the different individuals belonging to one age group may not be the same.

In addition, energy is necessary for the various activities carried out by man. Generally the amount of energy we obtain, should be equal to the amount of energy we use up.

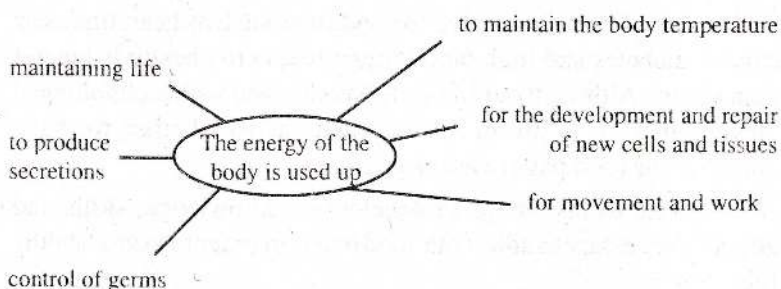


Fig. 7.2

Energy requirement is expressed in kilo joules (KJ). The unit kilo calory used so far is now being removed according to international standards.

1 kilo calory = 4.18 kilo joules.

Nutrients, may be described as a source of energy to be provided to the body from outside. Food is accepted as the main transport agent that, satisfies man, by providing these nutrients required by man from birth to death. Food occupy a main place among the requirements that should be fulfilled for the wellbeing of an individual. It is essential that one needs to be healthy, so that the digestion of food, absorption of nutrients and the process of metabolism take place properly. Therefore a healthy environment as well as exercises to the body, help in maintaining development and proper functioning of the body activities.

Our main nutrient requirements

1. Carbohydrates - Starch
 Sugars
 Non starch Polysacharides (food fibre)
 (N S P)
2. Fats and oil
3. Proteins
4. Vitamins
5. Mineral salts.
6. Water.

From among the above mentioned main nutrients, about 40 nutrients necessary to maintain the body activities properly have been identified. Food may sometimes contain, nutrients, that have not been identified so far. Hence in order to obtain all these nutrients it is essential that various foods be selected for consumption. Also it is essential that each individual consumes the sufficient quantity of food.

A major part of any meal will contain, carbohydrates, fats and proteins. During metabolism of these foods within the body, the energy quantities mentioned below are generated while carbon dioxide and water are produced.

Energy generated	kilo joules/grams
Carbohydrates	17
Proteins	16
Fats	37
1 kilo calorie	= 4.180 kilo joules
1 kilo joule	= 0.239 kilo calories

Food should contain the correct mixture of these nutrients such that the amount of energy sufficient to maintain proper body activities could be provided there are many views among us with regard to the addition of fat to our food. The reasons for the inclusion of a certain amount of fat essentially in a diet are given below.

1. Being unable to take a large amount of carbohydrate, such that the energy requirement is completely provided.
2. Vitamin A, D, E and K could be obtained by the body only through, food containing fats. The reason being that fats should be present in the medium, if vitamins are to be absorbed into the body.
3. Being able to obtain the essential fatty acids.
4. Facilitating chewing and swallowing of food
5. Making food tasty.

The presence of a large fat content in food may result in unnecessary obesity and the deposition of fat that would block the internal cavity of blood vessels. Specially in the case of a person who does not exercise his body much, the tendency of growing obese is more.

These nutrients in addition to acting as energy sources are also used up in the formation of body structure. Glucose and other

monosaccharides, fatty acids and glycerol and amino acids formed during digestion of carbohydrates, fats and protein act as building units in the formation of body structure.

Necessity of protein

Proteins are formed by the combination of about 20 amino acids to one another in various ways. Among these, there are 9 amino acids that are essential to the body. Proteins should supply the amino acids necessary for the production of various secretions required during the development of the body as well as for the repair of body tissues. The amount of protein required to fulfill these requirements with respect to each age group, is indicated in the daily requirement chart.

Necessity of vitamins and mineral salts

Vitamins and mineral salts could be described as nutrients that are required in very small quantities for the correct functioning and control of the bio-chemical reactions involved in the supply of energy from the main nutrients and also during development. These cannot be produced within the body. Hence they have to be supplied through the food.

The types of vitamins contained in food by nature are carbonic compounds. They are of 2 categories.

1. Fat soluble vitamins
Vitamin A, D, E and K
2. Water soluble vitamins.
B vitamins
C vitamins

Among mineral salts iron, calcium, phosphorus, iodine are the main ones.

Nutrient, interrelationship

As much as there exists metabolic activities that are specialised for a particular nutrient there are nutrients that assist in the

metabolism of other nutrients. Therefore there exists a relationship among nutrients,

Example: The function of vitamin B, when obtaining energy from carbohydrates.

The function of vitamin C, during the absorption of iron.

No nutrient can be made use of alone. Within the human body which is amazingly constructed, there exists an interrelationship among all the basic nutrients as well as with their byproducts. Therefore in order to provide oneself with proper nutrition, today there is a trend to obtain food with much variety. The tendency to select food according to ones liking, with the intention of satisfying hunger may sometime give adverse results. When talking about nutrients, even though we cannot describe fibre as a nutrient, the fibre contained in food has an influence on a healthy life, Cereals, fruit and vegetables are foods containing fibre.

The fibre contained in food, provides many advantages such as,

- * Reducing constipation.
- * Reducing the risk of cancerous growth developing in the digestive system
- * Reducing fats and cholesterol in the blood.
- * Reducing obesity.
- * Controlling diabetes,

When investigating on food patterns, everyone is aware of the fact that, today, many are inclined towards prepared food available in the market. Many such foods are of low nutritive value and are at a lower level with regard to cleanliness. However they are of high cost. Various chemical substances may be added to prepared food for the purpose of preserving and also to give them a striking appearance. These may sometimes be harmful to the body. Hence when selecting healthy food it is wise to believe in natural food as far as possible.

A table on, recommended nutrients has been given in this chapter. The recommended amount of nutrients, prepared to suit Sri Lanka

is indicated in the table. Study the manner in which the various nutrient requirements of a person vary according to the age and body weight. You will observe that the daily requirement of vitamins and mineral salts is very small. Therefore this requirement could be fulfilled by consuming a diet containing a variety of food. You should fulfill your energy and protein requirement as required according to your age and weight. Find out as to what the protein and energy requirement is to suit your age and body weight. Study the tables on the nutrient values contained in different foods and estimate roughly, the amount of food required by you daily.

Calculate roughly, the amount of energy and protein you receive daily in relation to the nutrients you obtain from your daily food. Accordingly compare the energy and protein amounts you obtain now with the amount, you should actually receive.

Nutrition condition

After considering the nutrient requirement and the amount of nutrients supplied to you, can you be satisfied about your nutrition condition. The nutrition condition will be satisfactory when the nutrition requirement and the nutrient supply are balanced. This is a simple explanation. However the nutrient requirement of a person may differ according to the following.

1. Growth
2. Disease conditions
3. Body activities
 - * Exercise
 - * Profession
4. Maintenance of body activities
 - * Sex
 - * Age
 - * Physical state
 - * Climate

Table 7.1 The recommended nutrient amounts for Sri Lankans
(Recommended by the WFO/WHO in 1974 and based on the protein and energy requirements revised in 1985)

Group	Age in yrs	Body Weight (Kg)	Energy (K.cal)	Protein (g)	Vitamin A (mg) ++	Vitamin D (mg)	Thiamine (mg)	Riboflavin (mg)	Niacin (mg)	Folic acid (mg)	Vitamin B (mg)	Vitamin C (mg)	Calcium (mg)	Iron (mg)
males	>18	65	3000	37(55)**	750	2.5	1.2	1.8	19.8	200	2.0	30	400-500	8-15
females	average active	55*	2530	37(55)**	750	2.5	1.2	1.6	16.5	200	2.0	30	400-500	8-15
	>18													
	average active	55	2200	29(47)**	750	2.5	0.9	1.3	14.5	200	2.0	13	400-500	16-32
	pregnant	47*	1900	29(47)**	750	2.5	0.9	1.1	12.6	200	2.0	30	400-500	16-32
	breast feeding	47*	2100	38(62)**	750	10	1.0	1.5	13.8	400	3.0	30	1000	16-32
children	(first 6 months)													
	<1	47*	2650	46(75)**	1200	10	1.3	1.7	17.4	300	2.5	30	1000	9-17
	1-3	7.3	820	14	300	10	0.3	0.5	5.4	60	3.3	20	500-600	6-13
	4-6	13.4	1360	16	250	10	0.5	0.8	9.0	100	0.9	20	400-500	4-8
	7-9	20.2	1830	20	300	10	0.7	1.1	12.1	100	1.5	20	400-500	5-9
adolescent boys	10-12	28.1	2190	25	400	2.5	0.9	1.3	14.5	100	1.5	20	400-500	8-16
	13-15	36.9	2600	30	575	2.5	1.0	1.6	17.2	100	2.0	20	600-700	12-24
	16-18	51.3	2900	37	725	2.5	1.2	1.7	19.1	200	2.0	30	600-700	12-24
adolescent girls	10-12	62.9	3070	38	750	2.5	1.2	1.8	20.3	200	2.0	30	500-600	12-24
	13-15	38	2350	29	575	2.5	0.9	1.4	15.5	100	2.0	20	600-700	13-27
	16-18	49.9	2490	31	725	2.5	1.0	1.5	16.4	200	2.0	30	600-700	13-27
		54.4	2310	30	750	2.5	0.9	1.4	15.2	200	2.0	30	500-600	13-27

*indicated here is a nutrient recommendation made by the World Health Organisation in 1989. The range is indicated here according to the sources from which iron is supplied. The lower value, applies when 25% of the total energy content is supplied from animal food. However in the case of expectant mothers and breast feeding mothers, the iron content supplied from food is not sufficient. During such instances additions iron should be obtained in sufficient quantities according to the haemoglobin content of the blood. The amount of iron that should be taken during pregnancy varies between 60-240 mg per day. *Average weight of Sri Lankan men and women**. The numbers indicated within brackets represent the minimum protein content recommended for those who consume animal protein to a small extent. *The recommended amount of these vitamins should not be exceeded as poisoning (toxic conditions) may occur.

Consider how nutrition becomes useful in growth.

- * Increase in the amount of cells in the tissues during growth.
- * Production of new cells in place of the cells whose life time is over.
- * Repair of tissues, when the wounds formed during an accident or during a surgery has healed.
- * Production of various secretions.

eg: saliva, digestive juices, tears, breast milk.

- * For growth during pregnancy.

An extra amount of nutrients are required for the growth of the embryo conceived during pregnancy. During this period, extra nutrition is required for the body changes such as the development of breasts in the mother, development of the foetus, placenta development, increase in the quantity of blood, fat deposition and so on.

- * For development during adolescence

During adolescence more nutrients are required for growth. The period from the age of 10 to 19 year is considered as adolescence. During adolescence a rapid increase in height and an increase in weight can be observed. During this period, physical growth and maturity take place at a rapid rate. During adolescence the energy requirement is more. Hence the nutrition requirement of a person in his or her adolescence is more than that of an adult. During this period, the growth rate is second only to the growth that occur in the first year after birth. More than that required during all other stages in life, during this period a complete nutritional requirement is necessary. A proper nutritional state could be maintained by being free from diseases.

Identifying correct nutrition

1. A well developed body.
2. Weight to match height/age.

3. Strong and well developed/muscles.
4. A healthy skin/hair
5. Bright and clear eyes.
6. Being active.
7. If qualities such as the appetite for food, digestion and defecation take place normally then there is supposed to be correct nutrition.

*** Making use of the tables given here, see whether your height suits your age, Similarly see whether you possess the weight suitable for your height.**

Abnormalities occur as a result of not receiving proper nutrition. Given below are such nutrition abnormalities.

Marginal nutrition

This condition arises due to fulfilling of ones daily requirements only. Poor food habits and poverty may be the cause of this. Given below are some adverse results of this.

- * Absence of stored nutrients. As a result, during an accident or illness, as there are no stored nutrients sufficient for physical/ metabolic activities the person may become weak.
- * Unable to fulfill the growth requirements of the embryo during pregnancy.
- * Undernutrition resulting from not receiving sufficient nutrition required for the proper growth during childhood.

Under nourishment

When stored nutrients are used up and the daily supply of nutrients is not sufficient to fulfill the physical requirements, those in the risk age groups may get affected. Risk age groups.

- * Infants
- * Children
- * Expectant mothers
- * Elderly people

Table 7-2 Chronic Undernourishment (Stunting) from 5-18 years

Age		Minimum height expected (90% of medium) cms	
Years	Months	Male	Female
5	0	98.9	97.6
5	3	100.4	99.0
5	6	101.8	100.4
5	9	103.1	101.8
6	0	104.5	103.1
6	3	105.8	104.5
6	6	107.1	105.8
6	9	108.3	107.2
7	0	109.5	108.5
7	3	110.7	109.8
7	6	112.0	111.2
7	9	113.1	112.4
8	0	114.3	113.8
8	3	115.5	115.00
8	6	116.6	116.4
8	9	117.8	117.7
9	0	119.0	119.0
9	3	120.2	120.3
9	6	121.3	121.7
9	9	122.5	123.1
9	0	123.8	124.5
10	3	125.0	125.9
10	6	120.3	127.4
10	9	127.6	128.8
10	0	129.0	130.3
11	3	130.3	131.9
11	6	131.8	133.4
11	9	133.2	134.9
12	0	134.7	136.4
12	3	136.2	137.8
12	6	137.7	139.1
12	9	139.3	140.3
13	0	140.9	141.4
13	3	142.4	142.4

13	6	143.9	143.1
13	9	145.4	143.8
14	0	146.8	144.4
14	3	148.8	144.7
14	9	150.8	145.4
15	0	152.1	145.6
15	3	153.3	145.8
15	6	154.4	145.9
15	9	155.3	146.1
16	0	156.2	146.2
16	3	157.0	145.3
16	6	157.7	146.4
16	9	158.2	145.6
17	0	158.6	146.8
17	3	158.9	147.0
17	6	159.0	147.1
17	9	159.1	147.2
18	0	159.1	147.3

Example

The minimum height for a boy between the ages 5 years and 5 years 2 months is 98.9 cm. and that for a girl of the same age is 97 cm.

When considering the age the completed number of months should be taken as 5 years 2 months and 29 days is taken as 5 years 2 months and not as 5 years 3 months.

Table 7.3 Acute Under - nourishment (Wasting)

Height		Minimum weight expected (80% of medium) cms	
cm		Male	Female
90.5	- 91.4	10.7	10.5
91.5	- 92.4	10.9	10.7
92.5	- 93.4	11.1	10.9
93.5	- 94.4	11.3	11.1
94.5	- 95.4	11.5	11.3
95.5	- 96.4	11.7	11.5
96.5	- 97.4	11.9	11.7
97.5	- 98.4	12.2	11.9
98.5	- 99.4	12.3	12.1
99.5	- 100.4	12.6	12.3
100.5	- 101.4	12.8	12.5
101.5	- 102.4	13.0	12.7
102.5	- 103.4	13.3	13.0
103.5	- 104.4	13.4	13.2
104.5	- 105.4	13.7	13.4
105.5	- 106.4	13.9	13.6
106.5	- 107.4	14.2	13.8
107.5	- 108.4	14.4	14.1
108.5	- 109.4	14.7	14.3
109.5	- 110.4	15.0	14.6
110.5	- 111.4	15.2	14.9
111.5	- 112.4	15.59	15.1
112.5	- 113.4	15.8	15.4
113.5	- 114.4	16.0	15.7
114.5	- 115.4	16.3	15.9
115.5	- 116.4	16.6	16.2
116.5	- 117.4	16.9	16.5
117.5	- 118.4	17.2	16.8
118.5	- 119.4	17.4	17.1
119.5	- 120.4	17.8	17.4
120.5	- 121.4	18.1	17.8
121.5	- 122.4	18.4	18.2
122.5	- 123.4	18.7	18.5
123.5	- 124.4	19.1	18.9
124.5	- 125.4	19.4	19.3
125.5	- 126.4	19.8	19.7
126.5	- 127.4	20.2	20.1
127.5	- 128.4	20.6	20.6

128.5	-	129.4	21.0	21.0
129.5	-	130.4	21.4	21.4
130.5	-	131.4	21.8	21.9
131.5	-	132.4	22.2	22.4
132.5	-	133.4	22.7	23.0
133.5	-	134.4	23.2	23.5
134.5	-	135.4	23.7	24.1
135.5	-	136.4	24.2	24.6
136.5	-	137.4	24.7	25.2
137.5	-	138.4	25.2	25.4
138.5	-	139.4	25.8	25.9
139.5	-	140.4	26.4	26.8
140.5	-	141.4	27.0	27.3
141.5	-	142.4	27.6	27.9
142.5	-	143.4	28.2	28.5
143.5	-	144.4	28.9	29.0
144.5	-	145.4	29.6	30.3
145.5	-	146.4	29.7	30.9
146.5	-	147.4	29.8	31.5
147.5	-	148.4	30.1	32.6
148.5	-	149.4	30.8	33.1
149.5	-	150.4	31.1	34.0
150.5	-	151.4	31.7	34.7
151.5	-	152.4	32.3	35.3
152.5	-	153.4	33.1	36.9
153.5	-	154.4	33.8	37.5
154.5	-	155.4	34.8	38.1
155.5	-	156.4	35.4	38.5
156.5	-	157.4	36.0	39.0
157.5	-	158.4	37.3	40.0
158.5	-	159.4	38.1	40.4
159.5	-	160.4	39.5	40.8
160.5	-	161.4	40.4	41.3
161.5	-	162.4	41.0	41.8
162.5	-	163.4	41.5	42.4
163.5	-	164.4	42.2	42.9
164.5	-	165.4	42.8	43.4
165.5	-	166.4	43.9	44.2
166.5	-	167.4	44.5	43.8
167.5	-	168.4	45.2	45.3
168.5	-	169.4	45.8	46.0
169.5	-	170.4	46.3	46.7
170.5	-	171.4	47.5	47.2
171.5	-	172.4	48.2	47.7

172.5	-	173.4	48.9	48.4
173.5	-	174.4	49.5	48.8
174.5	-	175.4	50.1	49.1
175.5	-	176.4	50.7	49.4
176.5	-	177.4	51.1	49.4
177.5	-	178.4	51.6	49.9
178.5	-	179.4	52.3	50.1
179.5	-	184.4	52.9	50.4
180.5	-	181.4	53.8	
181.5	-	182.4	54.3	
182.5	-	183.4	54.8	
183.5	-	184.4	55.5	
184.5	-	185.4	56.3	
185.5	-	186.4	56.9	
186.5	-	187.4	57.5	
187.5	-	188.4	58.1	

The main causes for under nourishment could be mentioned as not taking the sufficient amount of food and being subjected to diseases.

Adverse effects of under nourishment

- * stunting
- * wasting
- * low birth weight
- * anaemia
- * obstructions to studies
- * less active (inactive children)
- * retardation in physical development
- * blindness/eyes affected
- * death risk
- * prone to diseases

Characters by which a person subjected to under nourishment could be identified are described as indexes.

Indexes of under nourishment

- * A very thin child will not be of a weight suitable for the height. This is known as, wasting.
- * A very short child will not be of a height suitable for the age. This is known as stunting.

Both these indexes show undernourishment.

Hypernutrition

The consumption of energy giving food in excess of the amount that is required by the body results in hypernutrition. If a person consumes food in excess of the amount required for body functions the excess energy is deposited in the body as fat. The body become obese. The weight exceeds the normal weight the body should possess. This results in the occurrence of various diseases. The tendency for the occurrence of diseases increases with the lack of exercise.

We mentioned earlier in this chapter that physical exercise, is a factor that affect the nutritional condition of a person. Hence from here onwards, we will pay special attention towards sports and provide information.

Nutrition of sportsmen

You are aware of the fact that nutrition and sports are essential for a healthy life.

A sportsman or athlete should pay special attention towards his nutrition if he is to achieve the maximum results from his event or sport. Energy is required for the activity of the muscles in the body. Food acts as the fuel supplying this energy. You know that energy is used up when participating in sports. The energy thus used up should be replaced by food.

Let us investigate as to how the food components such as proteins, carbohydrates, vitamins, mineral salts and water affect the nutrition of a sportsman.

Food containing carbohydrates is important for a sportsman in order to provide himself with the energy required for exercise and sports. Starch that is stored as glycogen in the muscles and liver is used to supply the energy required during exercise. When these are less than the required amount, you may feel very tired and exerted during exercise. An athlete should therefore take food containing starch without fail. 50%-60% of the daily food of an athlete should be starch generating.

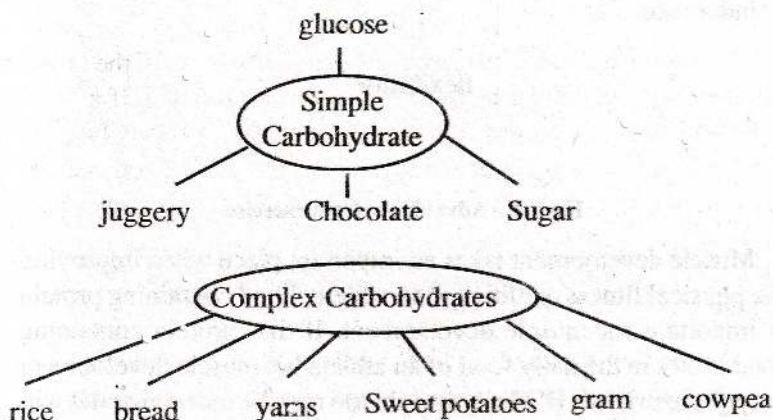


Fig 7.3 simple carbohydrates and complex carbohydrates

It is more suitable that an athlete take his main meal about three hours before participating in the event. The reason for this being that it is difficult to play with a full-stomach. Also, about three hours should be given for food to be digested and absorbed into the body.

For an athlete to come back to normal after participation in a sport, he should consume a carbohydrate rich meal, within the next four hours. The reason being that from the moment the event is completed the glycogen stores that have been used up need to be strengthened again. Taking glucose may be a disadvantage.

During exercise the physical fitness qualities of a sportsman should be improved. You will gain more knowledge, on this aspect from the chapter on physical fitness.

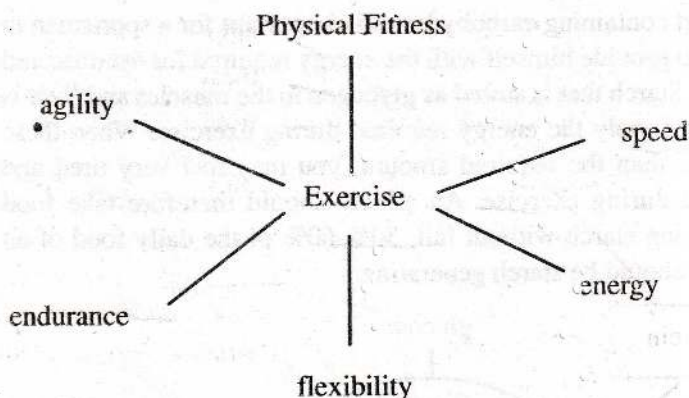


Fig 7.4 - Advantages from exercise

Muscle development takes an important place when improving the physical fitness qualities of an athlete. Food containing protein is important for muscle development. If the protein containing food is less in the daily food of an athlete his muscle development may get restricted. His body weight too may be reduced and it will be difficult to improve his physical fitness qualities too. Hence it is important that about 10%-20% of protein should be contained in the daily energy requirement of an athlete. The belief that an athlete requires mostly protein is a myth.

The protein requirement of a normal athlete is about 1.2 g per kilogram of the body weight.

In the case of a short distance runner, this amount may increase up to 1.4 g. In the case of those engaged in body building exercises such as weight lifting, the protein requirement is somewhat more. That is about 2.4 g.

You know that protein containing food consists of two main types.

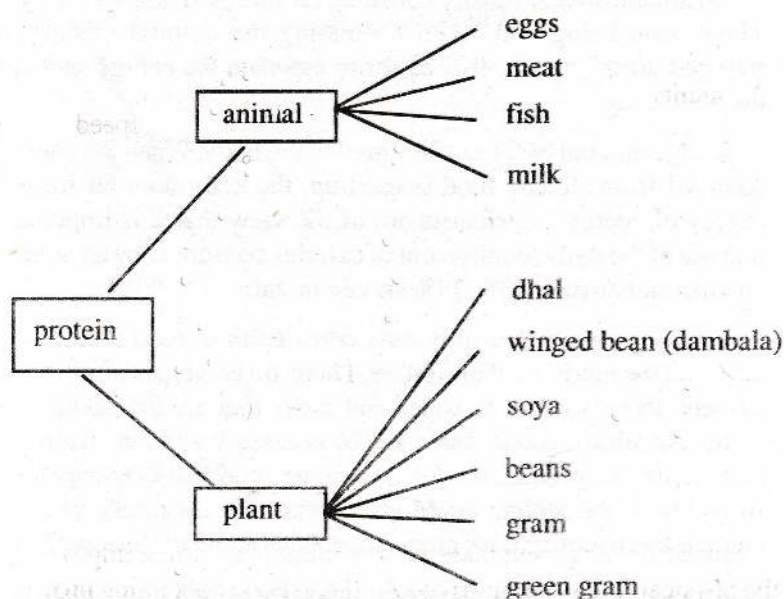


Fig 7.5 A Simple classification for food containing protein

It is suitable for an athlete to obtain the necessary protein from a mixture of animal and plant material.

Let us now investigate the importance of fats in the nutrition of an athlete. Fats could be divided into two, namely, fats visible to the eye and fats not visible to the eye.

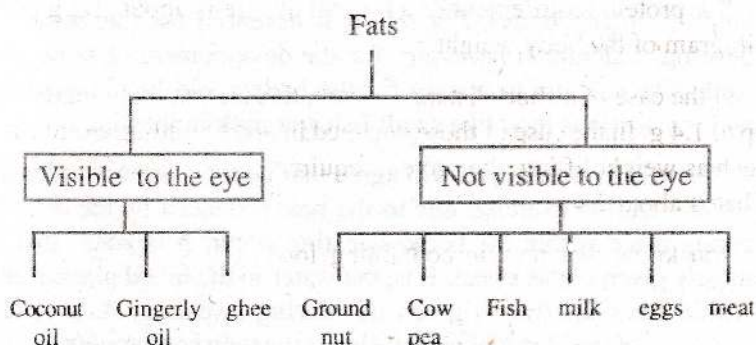


Fig. 7.6 Fats visible to the eye and fats not visible to the eye

An athlete should mostly consume fat that is visible to the eye. The reason being that when estimating the amount of energy required during sports. It is easier to estimate the energy units in the visible fat.

A large amount of fat can be stored in the body. When the energy received from starchy food is used up, the body uses fat for the supply of energy. Nutritionists are of the view that it is important that out of the daily requirement of calories consumed by an athlete an amount between 30%-35% should be fat.

Vitamins are another important constituent of food that has an effect on the nutrition of an athlete. There are two types of vitamins namely, those soluble in water and those that are not soluble in water. An athlete could obtain all the necessary vitamins from the carbohydrates, protein and fat containing food that is taken daily. In addition, the athlete could also obtain the necessary vitamin content by consuming dark green vegetables and dark yellow fruits.

Among mineral salts, the more important ones for an athlete are iron, calcium and potassium. The iron necessary for the body could be obtained from animal food. Within the bone marrow, haemoglobin is formed by the combination of iron with the young blood corpuscles. The oxygen necessary for the production of energy that is used up during the various activities is carried to the muscles by its combination with haemoglobin. Hence it will be clear to you that iron is essential for an athlete. If one is to become a good athlete or sportsman he should have a built to match his height (athletic body). For this it is essential for the bones to develop. Calcium is necessary for the development of bone and teeth. The calcium necessary for the body could be obtained by taking nutritious food like small fish and milk in the diet.

There is no doubt, you will agree that water is important for an athlete. During exercise, due to the heat produced by the actions taking place within the body, sweating occur. It is water that is mostly given out as sweat. It is, the water in the blood plasma and within the cells that is given out during sweating. As a result thickness of the blood increases. Hence the transport process within the body takes place with difficulty.

During sweating salts such as sodium and potassium too are given out from the body in addition to water. As a result the muscle action is reduced and the ability to exercise too may decrease. Therefore it is suitable to give athletes salts like those of sodium and potassium along with water. These necessities could be made up by giving food containing water such as papaw, plantain, water melon, cucumber and mango and also by giving 'Jeevani' prepared in the correct way.

Do you know that the body weight of an athlete has an influence on his athletic skills? Several factors affect the weight of an athlete. They are:

- *Age
- *Sex
- *Nature of the sports activity or game
- *Size of body of the athlete

If you are an athlete, find out from your sports doctor, the weight that suits you. Then you may be able to adjust your weight with the food you take. If your weight is more or less than the relevant weight, your productivity in the particular sport will be less. Therefore control your weight by adjusting your nutrition pattern. You will then be able to become a clever athlete.

When talking about family nutrition, it is absolutely essential that we mention about infant nutrition. Giving only breast milk during the first four months of an infant will help immensely in the development of the child. Breast feeding is advantageous not only in providing correct nutrition but in many other aspects too.

The advantage of giving breast milk to an infant

- * Breast feeding an infant is important in many aspects, such as in nutrition, health, social and economical.
- * The nutritional value of breast milk.
- * During the first four months itself, all the nutritional requirements (carbohydrates, fats, proteins, vitamins and minerals) necessary for the growth of the infant are fulfilled.

- * Could be given to the infant more easily than any other milk food. Breast milk contains hormones that speed up the development of the digestive system in the infant. Also the child obtains from the mother enzymes such as lipase that facilitate digestion.
- * Breast milk also contain special amino acids necessary for the development of the child's brain.
- * The milk secreted during the first 3-4 months contain the required amount of anti bodies and antibacterial cells. These provide immunity.
- * The yellow coloured liquid called colostrum that is secreted during the first few days acts as a decoction for the infant. This performs the task of cleaning the digestive system of the child.
- * Colostrum also contains antibodies.
- * Breast milk is extremely pure as there is no possibility of germs entering from outside. It has a suitable warmth.
- * A close, mutual, love and affection is built up between the mother and child during breast feeding.
- * Money is not spent specially on this.
- * The infant could be fed whenever it needs milk.

Considering all these facts, it will be an easy task for you to decide on the milk to be given to your baby one day.

When discussing about nutritional requirements, it was stressed in this chapter that the nutrition of those in various physical states should be different in each case. Accordingly adolescents, expectant mothers, breast feeding mothers and school going age children are those with special nutritional requirements. In addition, one's physical activities too may be considered as one cause for special nutritional needs. You have learnt that a person who exerts his body much needs food that provides excess energy. Among them, an athlete too occupies a special place.

8. Challenges and Protection

(Challenges we face in life)

From the moment we conceive inside our mothers womb as an embryo and pass through the various stages in life, such as infancy, childhood, adolescence, youth and adulthood, until we reach death we are faced with various challenges. Among these various challenges, we come across things that influence us physically, mentally and socially. It is of extreme importance that we identify the challenges that may have an impact on our health and wellbeing.

There exists a strong relationship between our environment and us. The earth we live in, air, water, houses, schools, buildings, vehicles etc can be described as our physical environment. Various challenges may be posed on us, as a result of some discrepancy that may occur in the physical environment.

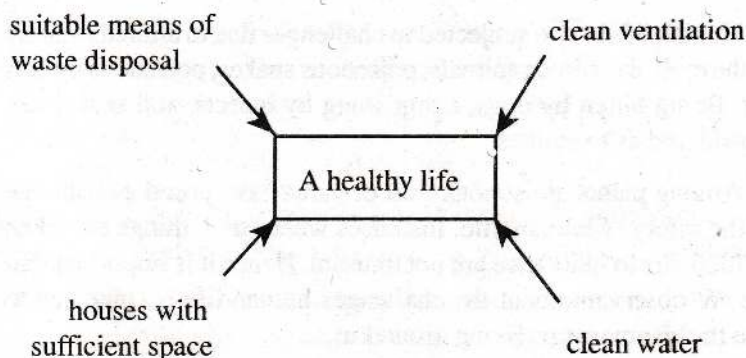


Fig. 8.1 - Some environmental conditions that are important for maintenance of a healthy life

Our physical environment may be polluted by things such as various chemical substances and radioactive substances. The environmental pollution that may occur with the increase in use

of pesticides and insecticides is an example. Similarly, our environment gets polluted with the wastes disposed from industrial centres and also by loud noise. Due to these reasons preventing ourselves from the threats posed on our health and wellbeing can be considered as a great challenge.

Similar to the challenges from the physical environment we are also faced with many challenges due to various organism living in our environment from among these organisms, it is necessary that we should findout about the micro organisms not visible to our eyes as well as about the large plant and animal species.

Instances of diseases caused by micro organisms, that pose a challenge to human life are very common. Micro organisms are the causes of many infectious diseases, These micro organisms enter our body by various means and cause various diseases. These disease causing germs enter the body with food, water, during respiration, through contact, through sexual contact and through the blood. Table 8.1 indicates some categories of diseases and some of these disease causing micro organisms.

Human life is also subjected to challenges due to animals visible to the eyes, dangerous animals, poisonous snakes, poisonous insects etc. Being bitten by dogs, being stung by insects, and snakes are considered as examples.

Among plants, poisonous fruit or yams have posed a challenge to the safety of human life. Instances where such things are taken as food due to ignorance are not unusual. Hence it is important that we are observant about the challenges human life is subjected to due to the organisms living around us.

Similarly our social environment is equally important to us. We should not forget the fact that man is a socialised animal. We must maintain a healthy relationship with the various people in the family, school and society. We may come in contact with various individuals in these places. It is important that our mental environment becomes a lively and enthusiastic one as a result of the relationship existing between them and us.

Table 8.1 - Diseases and some disease causing agents.

disease category	disease causing micro organism category	examples of diseases
respiratory diseases	virus, bacteria	normal cold, cough/cold, infections of the ear, pneumonia, tuberculosis, diphtheria, whooping cough.
diarrhoea	virus, bacteria	watery diarrhoea, blood and mucous diarrhoea, cholera, typhoid.
sex related diseases	unicellular organisms	amoebic dysentery.
	fungi	candida disease.
	virus	HIV/Aids infection
diseases on the skin		sexual warts
	bacteria	sexual herpes
		gonorrhoea
		syphilis
urine infections	unicellular organisms	Trichomonas disease.
	bacteria	various infections
	fungi	dandruff, eczema athletes foot
infections affecting the nervous system	virus	warts
		various infections
	bacteria	hydrophobia, polio, Japanese encephalitis
		tetanus
	bacteria	meningitis or brain fever.

We may be faced with various challenges mentally, while living in compliance to the society we live in, its culture, its values and its accepted ideas and beliefs. Being unshaken and facing such challenges successfully, itself is indeed a great challenge.

As humans we all need a peaceful, secure and appreciative mental environment filled with happiness and affection. When compared with certain challenges we face physically, overcoming the various mental needs that arise during various periods of our life or facing them successfully may be even a more difficult task.

We have to face various challenges during every period of our lifetime.

Challenges are not restricted only to one period of our lifetime. The challenges we have to face during the various periods of our lifetime too are varied.

The embryo that develops inside the mother's womb is extremely safe. It is provided with the maximum safety. The safe delivery of a child to this world is really a wonderful creation of nature.

The healthy development that takes place both physically and psycho-socially during infancy and childhood may be considered as winning a great challenge. This period during which a number of changes take place in the body as well as in the mind is also a period during which a maximum social development too is seen to take place. During this time period many challenges with regard to health will have to be faced.

The physical, mental and social changes that arise naturally during adolescence too will undoubtedly be a challenge to you. Phenomena such as the rapid growth of the body, the development of the sex organs, the first menstruation, and the first sperm ejaculation may frighten the adolescent mind. Similarly certain emotional feelings that may arise in you naturally, too may be frightening. In this adolescent age you have to move about with your peer groups, you are attracted towards those of the opposite sex. Sometimes you may also get tempted to experiment on dangerous and risky things. During such instances as these you may sometimes get misled by antisocial attitudes. Acquiring great achievements in life while maintaining these physical and mental changes undisturbed, is itself a great challenge won in your life. Really speaking you have reached adolescence, after winning many challenges!

As you pass your adolescence and reach young adulthood you are faced with many other challenges. During adolescence what is of special importance to you is that you should not give priority to your natural feelings and desires but concentrate well in your studies

keeping to the expectations of your teachers and parents. Similarly we must also further develop any inherent or inborn talents we possess. As young adults you have to face many responsibilities such as selecting your profession, successful completion of your education, marriage, bringing up children and so on. Really speaking these too are challenges you face in life. The subsequent approach of adulthood and old age respectively, too will pose certain challenges on you. Social changes such as marriage of children and their leaving the family, retirement from the job and also certain physical changes too become evident during this time. Such changes should be identified and faced successfully.

Accordingly it is very important that we make a firm determination to remain unshaken and successfully face the various challenges we meet during our lifetime.

What are the challenges that affect our health?

Most challenges we meet in life, affect our health. Finding out and being aware of these will help us to face them successfully. Obtaining nutrition for proper physical growth has become a challenge today. Ignorance of preparing a nutritious meal too is a challenge affecting nutrition. Being accustomed to a new type of food pattern (being accustomed to instant and processed food) in this busy and competitive environment has paved the way to nutrition problems. We should therefore possess a good understanding about nutrition.

To maintain proper physical growth we should prevent from being subjected to physical diseases often. In the section ahead in this chapter, more facts will be given about diseases, considered as a challenge in life. Being free from infectious as well as non infectious diseases is really a challenge.

As much as food provides nutrition to the body the mind too requires nutrition. The new born baby who is helpless and unable to do anything at birth can only express its feelings by crying. With time this infant grows to be adult. It is this infant who later turns

out to be a successful, active, independent and sociable individual. This complex process is known as the psycho-social development. This process can be described as a concept that includes personality development, emotional development, development of the intelligence level and the development of various skills.

Really speaking, maintaining our life in a way suitable for the society we live in, developing our spiritual qualities and developing values and attitudes can be considered as winning the various challenges we come across in life.

We can successfully face these physical, mental and social challenges.

You arrived at this beautiful adolescence after winning many challenges that were directed towards your life. Naturally you who won these challenges in the past can be confident of winning the challenges you come across in the present too. It is important that you build up this self confidence and self esteem.

Infectious diseases are challenges that affect health

Infectious diseases have become a health threat in our country from the past. Among such diseases, diarrhoeas and respiratory infections can be mentioned as examples.

When comparing the percentages of patients that have been hospitalised during 1970 - 1995 it is clear that diarrhoea and respiratory diseases occupy a first place.

During the past, certain infectious diseases had been a public health problem that was controlled. This is again raising head due to various factors. Diseases such as malaria, tuberculosis and cholera are examples of these. From the latter half of 1997 there is a threat of the spread of cholera again. During the period between October 1997 to December 390 cholera patients have been reported while 9 have died of the disease. (As per reports of the infectious disease division of the Health Ministry).

Still other infectious diseases that had not been a public health problem at all in our country during the past, have emerged newly. Diseases such as dengue, dengue haemorrhage fever, Japanese encephalitis and Aids can be given as examples of these.

In the year 1996 according to reports of the infectious disease division the number suspected as Japanese encephalitis was 306 out of which 108 was confirmed as positive cases. 44 among them died. In 1997, out of 126 suspected cases 65 patients were positive cases of which 17 of them died. In 1996, 1294 patients were suspected as suffering from dengue out of which 401 were positive cases of which 54 died. In 1997 this condition improved a little and 812 patients were suspected of dengue out of which 120 were positive cases. 14 of them died. Accordingly it is clear that as in the distant past in the present too infectious diseases are a threat in our country.

Similarly some new types of respiratory diseases and diarrhoea disease conditions are being identified. Also the development of resistance to antibiotics too is another new trend.

Thus the reason as to why infectious diseases have posed a challenge on us is that we ourselves have given room for the spread of these diseases. Sexually transmitted diseases including HIV/aids, hydrophobia, tuberculosis and other long lasting respiratory diseases, filariasis and malaria remain a challenge in Sri Lanka even today. Leprosy has been controlled to a great extent and is hoped to be eradicated in the near future.

The main reasons for the spread of diarrhoea and respiratory diseases are unsatisfactory living conditions (houses without ventilation and light), poor sanitary facilities, and being not accustomed to favourable health habits.

Rapid urbanisation and semi urbanisation without planning is seen in our country today. Also one cannot be contented with the sanitary facilities available in the refugee camps that have arisen as a result of the war.

We ourselves have helped in the spread of diseases like dengue, due to urbanisation and the busy life style. The dengue spreading

mosquitoes such as *Aedes aegypti* and *Aedes albopictus* breed in, breeding places created by our own selves. Discarded coconut shells, empty king coconuts, tins, yoghurt cups etc as well as flower vases where water has not been changed, water tanks, rain gutters and tyres, where water has collected can be given as examples.

The spread of Aids and other sex related diseases too have been specially influenced by changes in our social setup. The social values and attitudes that prevailed in our society from the past have dwindled today. In the face of the Aids threat, diseases such as Tuberculosis are again emerging. The reduction in immunity in these patients has paved room for contact of such diseases.

The increase in resistance micro organisms towards antibiotics too is a life of challenge we have caused. We are faced with this condition today, due to the use of antibiotics on our own without any consultation.

Non infectious diseases too are a challenge to diseases

Non infectious diseases too are a threat to us today. Diseases such as heart diseases, high blood pressure, diabetes, cancer, mental diseases and neuro diseases are very common today. According to reports of the health statistics division of the Health Ministry in the years 1970-1975 the number hospitalised due to diseases of the coronary artery as well as the number dying from such diseases is at a high level. High blood pressure diseases too show a similar level. Diabetes too has become a social problem today. It has been found that 5% - 6% of the population suffer from diabetes while it is seen that both young and old are subjected to this disease.

Increase of such non infectious diseases is a condition seen in developed countries. The change in our traditional life style is the main reason for this. While living in a highly competitive and busy world, we have given up our traditional food pattern and got accustomed to food that could be readily prepared or already cooked food. We who were accustomed to eating red rice or par boiled rice are today used to instant rice, polished rice, noodles and so on. In place of adding more and more natural foods to the diet, people are

used to instant food with a high fat and high salt content. Sweetend drinks and various sweet foods are very popular today. These food patterns have paved the way to diabetes, high blood pressure and coronary heart diseases. Similary today under a busy and competitive atmosphere many are subjected to high mental stress. Today man is trying to find relief from this mental stress by taking intoxicants. They resort specially to cigarette and liquor, Similarly being trapped between day to day duties and work in the home, he does not get proper exercise. All such factors result in conditions like diabetes and heart diseases.

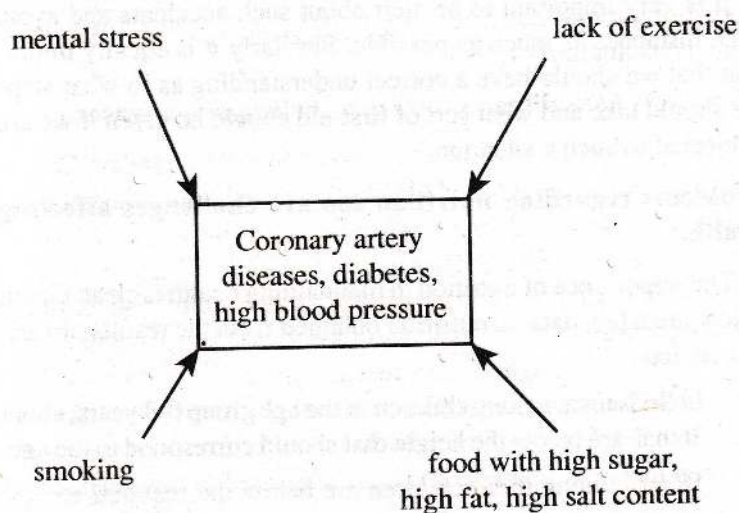


Fig. 8.2 Factors responsible for the cause of some diseases

Mental diseases too can be considered as a challenge. According to a study made in Sri Lanka it has been found that 1% of the population suffer from severe mental diseases while 10% - 12% suffer from minor mental diseases. This compares with the data shown by highly developed countries as well as that shown by

developing countries. Similarly from among those seeking treatment from government doctors or private doctors, it is said that 20% - 30% of them seeking treatment for some sort of mental problem they are faced with. Often they are not even aware that they have such a problem. A busy and stressful life style with over ambitious expectations will cause various mental stresses, posing challenges to our mental health.

We may be subjected to various accidents such as being bitten by poisonous snakes or dogs knocking against vehicles etc. According to reports of the health ministry, in 1995, 366 have sought treatment due to poisoning. 36.3% of these are cases where poisoning had occurred accidentally.

It is very important to be alert about such accidents and avoid such instances as much as possible. Similarly it is equally important that we should have a correct understanding as to what steps we should take and what sort of first-aid should be given if we are subjected to such a situation.

Problems regarding nutrition too are challenges affecting health.

The importance of nutrition in maintaining health is clear. Given below are a few data on nutrition obtained from the results of various studies.

- * In Sri Lanka, among children in the age group 0-3 years, about 36.4% are below the height that should correspond to the age.
- * 18.4% among these children are below the required weight to suit the height.
- * About 5.2% among these children are below the expected weight and height and are facing a severe under nutrition condition.
- * 21% of the children born in Sri Lanka are below 2,500g (2.5kg) at birth.
- * 30% of Sri Lankan women have not been able to reach the required height for their age.

- * Nutrition deficiencies such as anemia and iodine deficiency are evident among expectant mothers.
- * During the period of pregnancy a considerable percentage of expectant mothers do not show the specified weight increase.

Even though safeguarding ones nutrition condition is a responsibility of the young and old, nutrition should be started from birth itself. A young girl will one day reach adolescence and grow up to be a young woman who will become a mother soon. Therefore her nutrition should be maintained at a high level. It is very important to be concerned about these situations.

Accidents are another challenge that affect health

Accidents are another challenging situation that influences our health. An accident may happen at any place and at any moment to any person. Such challenges may be posed on us at any place such as the home, road, school playground and so on.

Among accidents, we often hear of or see incidents such as falling from a height, drowning, burns from fire or hot water, burns from various chemicals, poisoning, electric shock, injury from sharp or pointed objects, various substances falling into the nose or ear, swallowing various things etc. It is very essential that we identify accidents that happen around us and take the necessary precautions.

Prevention from getting inclined to drugs is a challenge

Saying 'No' to drugs or going against any forces trying to drag us towards these is a real, life's challenge. Various intoxicants including liquor, cigarettes come under the category of drugs.

Today various groups are eagerly working to drag the youth to drugs. Drug dealers, those who have already ruined their lives by taking to drugs, also those aiming at making us victims of various sexual activities are eager to drag us to drugs.

A main cause for the youth taking to drugs being the myths and wrong beliefs that are rooted in the society. Identifying these without been carried away by these myths and wrong beliefs

and taking care not to resort to any form of drug, is a real challenge. Resorting to these may ruin your valuable future and your future progress. Destructive effects such as being subjected to diseases and even suicide may result. The real challenge, is to safeguard your valuable life and fulfill your obligations towards the human society.

Sexual harassment, sexual abuse and sexual molestation are a challenge to health.

There are so many in our society trying to subject us to various sexual harassment and sexual abuse. It is a myth to think, that young girls or women are the only ones who are used for these activities. Young boys and adolescents too become victims of these. Even among women there are instances where even elderly women have been subjected to harassment.

What is more special is that it is a person who is very close or known to you, who will make you a victim of these. It is very seldom that such a thing will happen from an unknown stranger. An adult or a close friend who is very close to you may show his closeness to you and try to involve you in such a thing.

Therefore it is not wise to consider places such as the home, the surroundings and the school as highly secure. Similarly keep in mind that places unfamiliar to us are also not safe.

The various differences prevailing in the social environment are a cause for this. You should keep in mind that some times your own behaviour, the way you dress and so on may arouse such a person emotionally.

At the same time it is important that you identify the natural changes taking place in your body and also the emotions and desires that arise in your mind. There are instances where people have almost ruined themselves knowingly by giving priority to such feelings and trying to fulfill their desires. School children like you should not devote undue attention on such matters and destroy your

future. Instead you should be determined to complete your education well and succeed in your future life.

During this stage it is more important that you devote attention towards various sports activities, social work and also towards the improvement of your abilities.

When subjected to sexual abuse often drugs are made use of. Hence it is very important that one should not get inclined to drugs. It should be remembered that when falling prey to these things there is even a possibility of contacting sexually transmitted diseases.

For the prevention of sexual mishaps, it is important to be alert about such situations and avoid such situations as much as possible. Similarly if there is any possibility of being subjected to such a situation it is important to be aware of the measures that should be taken to escape from it. At the same time it is important that we behave and dress in a modest way. When travelling alone on the road, you should be in a position to escape from a person who attempts to show an undue interest in you or you should be able to express your disagreement on it. If such a danger is about to happen in your home or school you should have the ability to escape from it or strongly protest against it. The most important thing here is to be alert about such things and also act with presence of mind.

Inculcate the habit of facing these challenges that affect health successfully.

It is important that we need to be aware of the fact that we have to face many such challenges during our life time. If we are to face them successfully we should develop confidence and self esteem in us. Our aim should be to face the problems in life and win them.

Similarly it is really important that we avoid facing certain situations. The use of drugs or sexual abuse can be cited as examples.

Similarly it is important that we learn to face the various physical, mental and social disturbances successfully. We should develop the strength to bear up happiness and sorrow, victory and defeat, fame and illfame and gain and loss.

Prevention from various diseases too is important. It is important that we build up behavioural patterns favourable for health or we should further improve the favourable patterns already possessed by us.

This could be explained with a few examples. Some simple steps that could be followed to prevent diarrhoea.



Fig. 8.3

Breast feeding an infant during the first four months



Fig. 8.4

Wash hands with soap and water before cooking food and before eating or feeding, also after using the toilet.

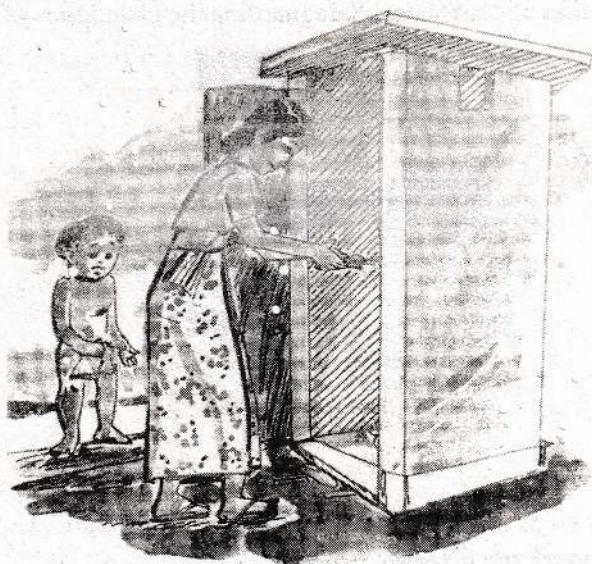


Fig. 8.5

The use of a toilet by all young and old for defecation, Emptying the defecate of infants and small children to the toilet.



Fig. 8.6

Boil and cool water used for drinking.

Prevention of diarrhoea. Safeguarding the cleanliness of food.



Fig. 8.7

Simple steps that could be taken to prevent dengue, and dengue haemorrhage disease.

cleaning blocked rain gutters, drains etc. Crush empty coconut shells, tins, yoghurt cups etc.



Fig. 8.8

Rearing fish in water tanks and ponds around the house if any.



Fig. 8.9

Changing the water in ant traps, flower vases etc often or adding salt to water.

Pierce, holes or fill sand in old tyres such that water will not get collected in them. Cleaning utensils where water is stored as often as possible.

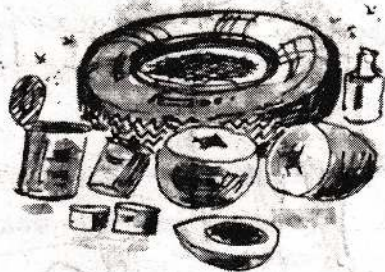


Fig. 8.10

It is also very important that we accustom ourselves to a healthy lifestyle, in order to prevent from infectious diseases.

Simple measures that could be taken to prevent heart diseases

It is clear that many of the above mentioned behaviour patterns are important in preventing from heart diseases as well as from diarrhoea and mental problems. Getting accustomed to a lifestyle where safety and protection is ensured is not a difficult task. Not undergoing undue mental stress too is a very essential thing.

Thus if we identify the various challenges we face in life and develop the strength to face them successfully, winning them would not be a difficult task.

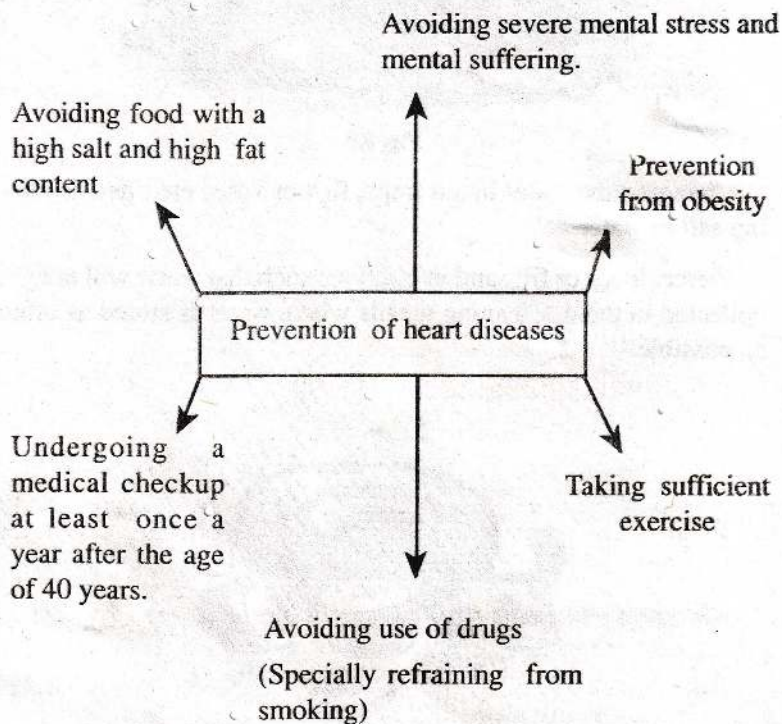


Fig 8.11 Measures that could be taken to avoid heart attack.

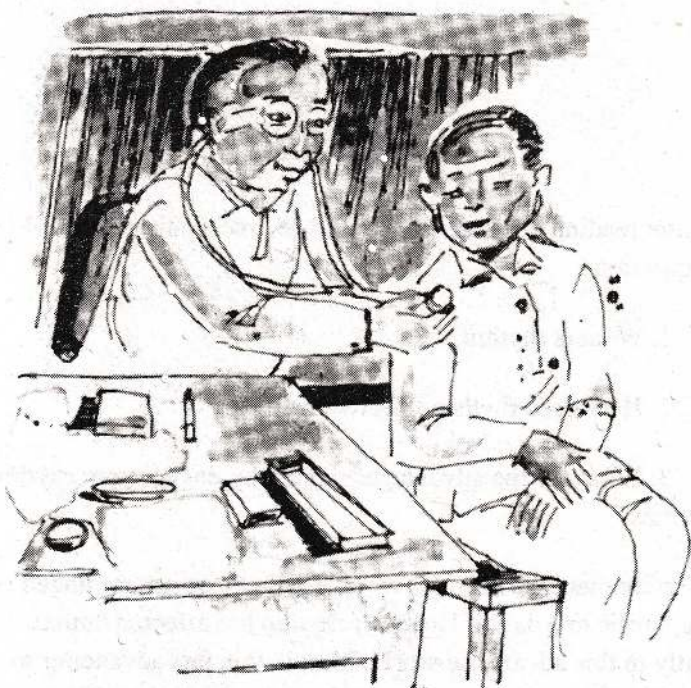


Fig. 8.12 - Facing a medical Checkup.

9. Rhythm

After reading this chapter you will be able to answer the following questions

1. What is rhythm?
2. How does rhythm affect your life?
3. What are the advantages gained by engaging in rhythmic activities?

The moment we hear the word "rhythm" we are reminded of a song, music or a dance. However rhythm has affected human lives greatly in this advancing world. Man in this fast advancing world is motivated to perform their daily tasks to rhythm. Hence it is clear to us that rhythm plays a major role in the society today.

After reading this chapter you will be able to understand the way man has adjusted his life pattern to rhythm.

You have learnt in grades 6, 7 and 8 that rhythm is, doing an activity or making a sound to time and rhyme. It is not only in sound that rhythm is found. It is found everywhere around us. In all movements of humans and animals, in a tree grown undisturbed, in an intricate design on a fabric or a wood carving or in an art. The pace of rhythm varies according to the movement, sound or the object. Hence you should realize that rhythm is a well coordinated harmonized well balanced movement, pattern, production or creation done to time and rhyme. We have learnt that rhythm is something we can build up in our body through physical activities performed.

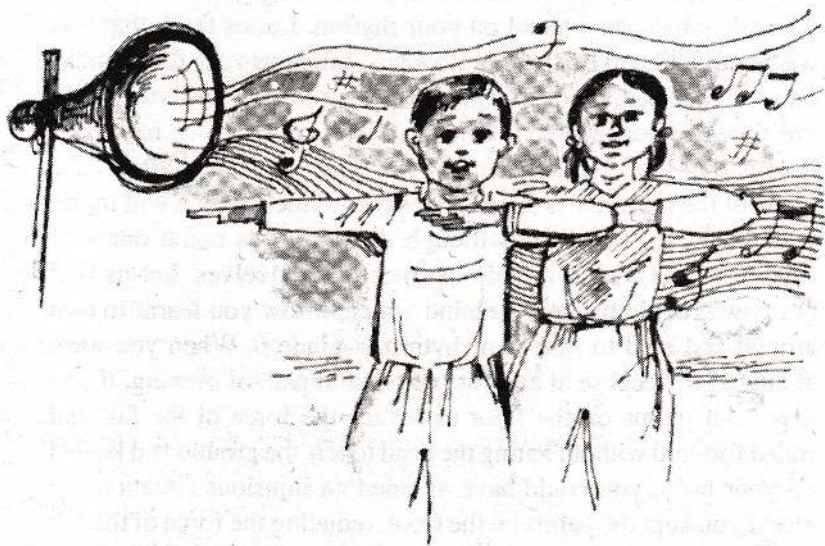


Figure 9.1 Doing exercises to rhythm

A person who has built up rhythm can obtain the necessary training within a short period to perform any task. If you train the game of volleyball to the 40 students in your class, only those who have built up rhythm in them only will be able to perform the skills correctly. A player should jump up to dash the ball across the net as it reaches the top edge of the net. Therefore a player should decide when his jump should reach its maximum to be in the correct position to dash the ball that is coming down. This well coordinated movement of a volleyball player to reach the ball at its correct height, to dash it successfully to the opposing side could be done only by a player who has built up rhythm in him. A player who has no rhythm in him, should train himself about 3-4 months to master this skill. Thus a person who has developed rhythm can perform any task without much effort in a short time. He will not feel tired because he uses less energy. The rhythm so developed in the body will not only help in sports but also in ones day to day activities.

You may have realized that when you are engaged in an activity your body balance depends on your rhythm. Let us think that you were compelled to run to get into a bus. Suppose your foot knocks on some obstacle while you were running for the bus, you might fall down by losing your balance. What actually has happened here is that the impact has caused a break in your rhythm. The break of the rhythm has caused a loss of balance, which will injure your body. However even though such injuries come our way rhythm in our body will help us to defend ourselves. Let us find out how it could happen. Remind yourself how you learnt to turn around and land to time and rhythm in grade 6. When you were about to fall because of an obstacle on your path of running, if you kept your palms on the floor to reduce the force of the fall and rolled forward without letting the head touch the ground and landed on your back, you could have avoided an injurious situation. Or else if you kept the palms on the floor, reducing the force of the fall and gradually rested the elbows on the ground and landed on your body, you could have avoided a similar situation. Hence if we build up rhythm in us we can escape any unsafe situation by being able to act flexibly.



Figure 9.2 A housewife engaged in her work while listening to music.

Let us now pay attention to the rhythm in music. Though we dance to the rhythm of music there is a tendency in the modern world to do many more tasks to the rhythm of music. Playing of soft back ground music in an office, a house wife engaged in her work while listening to music and music in a long distance bus are a few such common practises. If we ask anyone why they do so the prompt reply would be that they overcome fatigue. But what happens at the time is that they perform their daily tasks to the rhythm of music.

The above mentioned facts reveal that man today has used rhythm to perform their day to day tasks more efficiently and to enjoy the work. Hence you should realize that developing rhythm in your body is very important and useful.

10. Posture

After reading this chapter you will be able to answer the following questions.

1. What is meant by correct postures?
2. How do you maintain correct postures?
3. What are the discomforts caused due to incorrect postures?
4. Why is it important to maintain correct postures?

From the day man was born he displays various postures in his effort to live. Among these there are correct postures and incorrect postures. During our lifetime we display various postures.

1. Walking
2. Running
3. Sitting on the floor
4. Sitting on a chair
5. Sleeping
6. Standing
7. Lifting a weight
8. Throwing Something
9. Jumping

Man has to display the above postures and perform various activities in his day to day life. For the healthy wellbeing of the body and also for beauty it is very important to train oneself to maintain correct postures.

Think of a march past of an armed force. Their performance will attract the attention of all viewers. The reason being the man-

ner in which they maintain the correct posture in every movement. The activities performed by them by the most accurate display of their erect posture, forward march, standing at ease and standing at attention, attract the attention of everyone watching them. As school children, from a young age you must train yourselves to maintain correct posture. This will help you to grow up to be a healthy and attractive individual with a balanced personality.

It is a difficult task to correct the wrong postures you have got accustomed to, from your childhood.

A correct posture is one in which either during movement or when at rest, the posture maintained is such that all parts of the body are positioned correctly in a way that the joints and muscles get the minimum stress and the other movements of the body too are not disturbed.

Joints are made to bend more than to stretch. This natural tendency of joints could be stopped strengthening the muscles necessary to keep the body erect and stretch the joints.

1. Standing straight
2. Walking
3. Sitting on a chair
4. Sleeping

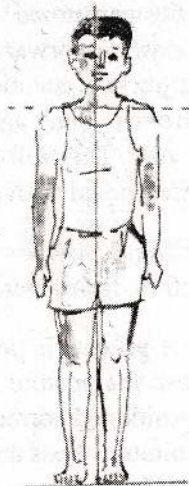
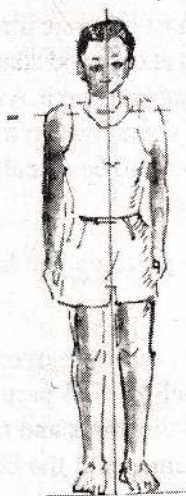
are postures that should be maintained daily. It is very important to get used to, maintain these correct postures from childhood.

1. Erect posture or standing straight

Pay your attention to the lateral view of standing straight. See how the vertical line from head to toe is positioned. When this posture is incorrect the head is more in front of the vertical line. The vertebral column is curved. The abdomen protrude forward, shoulders droop down. Study the difference in the correct and incorrect postures shown in the figure 10.1

Correct posture

Incorrect posture



Front view

Lateral view
(side view)



Figure 10.1 - Standing straight

2. Walking

Walking is coordinated with balance. When taking steps during walking the body is balanced by the head, feet and hands.

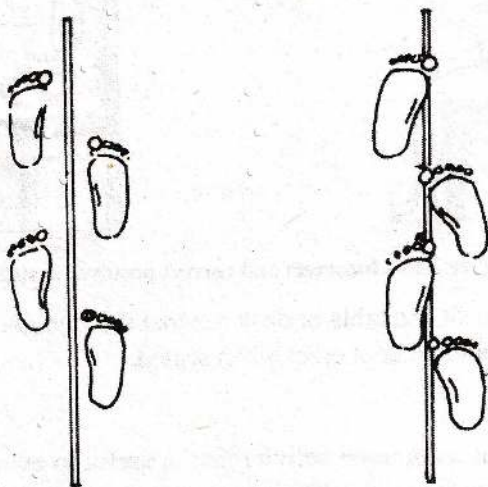


Figure 10.2 - Correct and incorrect postures in walking

The correct form of walking is pacing on either side of a horizontal line perpendicular to the body on the ground.

3. Sitting on a Chair

The two illustrations show the correct position and the incorrect position of sitting. Study the two figures separately and think for yourself whether your position of sitting is correct or incorrect. Get used to the habit of maintaining the correct posture always when sitting.

Incorrect sitting posture



Correct sitting posture

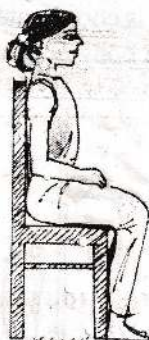
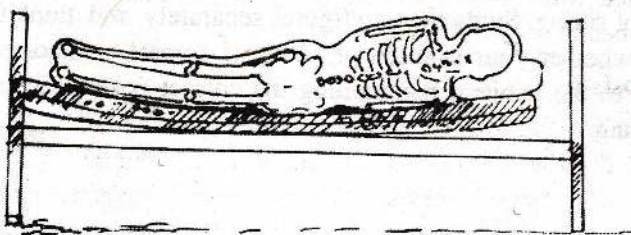


Figure 10.3 - Incorrect and correct postures in sitting

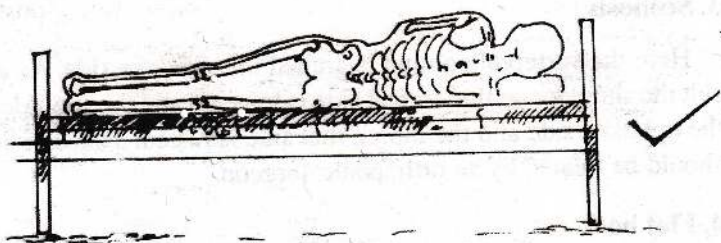
When you sit at a table or desk see that their height is such that the, spine could be kept erect when seated.

4. Sleeping

Sleeping is a common activity that is useful to everybody. It is very important to maintain the correct posture when sleeping. Some sleep on a mattress on a bed and some sleep on the hard floor. The mattress used should not be too hard or too soft. When the mattress is too soft the heavy parts of the body sink down and it becomes impossible to keep the body in the correct position. When you sleep on a very hard surface it becomes difficult to maintain the natural curves in the body. Study the illustrations given in figure 10.4 and understand the correct sleeping posture.



Incorrect posture



Correct posture

Figure 10.4 - Incorrect and correct postures in sleeping

Due to muscles becoming weak and the body constantly maintaining wrong postures the proper functioning of the body gets disturbed. As a result the following defects may arise in the body.

1. Kyphosis
2. Lordosis
3. Scoliosis
4. Flat back
5. Protruding abdomen
6. Flat feet
7. Bow legs and
8. Knock knees

1. Kyphosis

The upper part of the vertebral column arches back, the shoulder blades protrude out and the head thrust forward. The main cause for this defect is the continuous incorrect posture specially maintained while sitting and standing and as a result the back muscles becoming weak.

2. Lordosis

The main features of this defect are, the lumbar vertebrae of the vertebral column are pushed forward so as to assume a convex shape and the hips pushed back. The abdomen is seen to protrude forward and the head too is inclined forwards. This happens when the abdominal muscles become weak due to lack of sufficient exercise, and also due to continuous incorrect postures.

3. Scoliosis

Here the vertebral column is arched towards one side. As a result the shoulder on the arched side is lowered and the shoulder on the opposite side and the hip on that side is raised. This condition should be treated by an orthopedic surgeon.

4. Flat back

This is due to the lack of the natural arch or curve of the lumbar vertebrae. In small children this is a normal feature but as the child grows the vertebral arch forms. If this condition persists in adults it is a defect, which is due to the weakening of the muscles in the lumbar area.

5. Protruding abdomen

The abdomen droops due to the abdominal walls becoming weak. This condition may affect the position of the internal organs too. This may cause constipation and abdominal pain.

6. Flat feet

When the foot loses the natural arch it should possess and the whole foot touches the ground, the condition is known as flat feet. This means the inner edge of the foot touches the ground. Weakness of muscles, incorrect physical activities and use of unsuitable shoes are the causes of this condition.

7. Bow legs and knock knees

Both these conditions arise due to incorrect walking during early childhood. Children start walking when their feet could hold the body weight. But if forced the child being unable to hold its weight and the child tends to walk with the knees close to each other or (the tender bones bend) keeping the feet with toes turned inwards or outwards.

You will understand that maintaining correct postures and taking sufficient exercises are extremely important to maintain a healthy body and also to lead a virtuous and productive life.

11. Physical Fitness

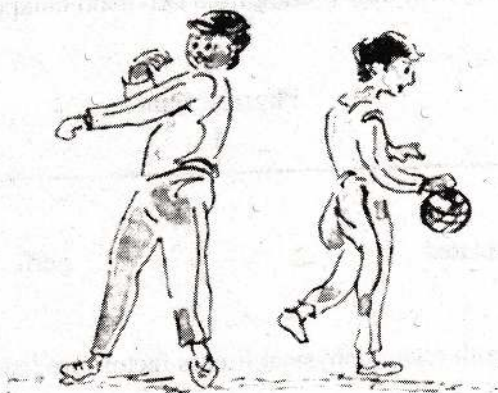


Figure 11.1 - Few activities to keep fit

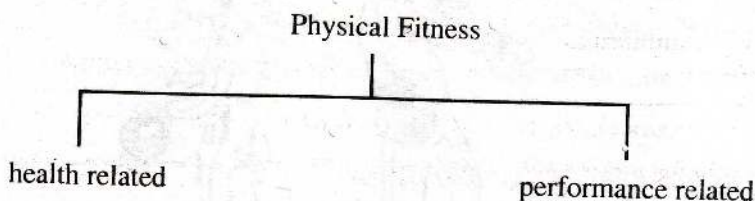
At the end of this chapter you will be able to answer the following questions.

1. Why are exercises necessary to you?
2. What is physical fitness?
3. How do you select the exercises you need?

In the modern world with the development of technology various types of machinery and electrical equipment were introduced to ease the activities of the day to day life of man. As man became a slave to these equipment his daily activities decreased gradually. Decrease in exercise may bring about harmful effects to the quality of life of man.

Certain qualities present in the body help us to perform our daily tasks. These qualities in us, are collectively called physical fitness. You cannot develop physical fitness by reading, seeing or thinking. You can improve your physical fitness by engaging in various activities involving movements. Physical fitness is of great necessity, if you want to become an efficient and productive individual who is physically and mentally fit.

Man's day to day activities could be eased by developing his physical fitness. An athlete with good physical fitness, will be able to reap maximum benefit from the event or sport he is participating in. Physical fitness comprises two main components.



Health related physical fitness factors are listed below.

- * Endurance of the blood circulatory system.
It is the ability of the blood circulatory system to provide a sufficient quantity of oxygen needed for a particular task.
- * Endurance of the muscles and muscular strength.
It is the ability of a muscle to maintain its strength and also maintain the strength continuously for the performance of a task.

- * **Flexibility**
It is the ability of the various joints to function within a maximum range.
- * **Designing of the body.**
It is the manner in which the body is designed.
Let us now identify the performance related physical fitness qualities.
- * **Speed**
Ability to perform a task in a short time.
Example: 100m run in a short time.
- * **Strength**
Generating power instantly
Example: When playing volleyball dashing the volleyball instantly.
- * **Agility**
Ability to maintain speed and position and direction.
Example: Stretch on the floor face down, get up quickly run to a target and back to the same position
- * **Equilibrium:**
Ability to remain in a particular posture without falling.
Example: Be in the "Bird" position in Gymnastics or Walk on a narrow beam.

If you can develop these qualities you can improve your performance related physical fitness.

You can develop your physical fitness by doing a series of simple exercises. These exercises can be divided into three main parts.

- (i) Warming up exercises
- (ii) Work out exercises.
- (iii) Cool down exercises

Any work out should start with warming up exercises and end with cool down exercises. You can select any activities you prefer for the work out. They could be

- * Aerobics
- * Activities done in pairs.
- * Stretching exercises.
- * Activities related to walking and running
- * Various games. Eg. Swimming
- * Cycling.

A general work out for physical fitness is a must for every individual. It will develop your muscles, flexibility and help you to maintain your weight and shape of the body. When selecting activities you should consider the following instructions.

- * Always select activities that will give you happiness and enjoyment.
- * Start the activities slow and increase the speed gradually.
- * Should not speed up at the start for it will cause pain and injure the muscles and joints.
- * Perform a sufficient amount of activities that you can endure.
- * Always breath comfortably
- * Use clothes and shoes suitable to do the activities
- * Be considerate about the climatic conditions

You can maintain your physical fitness by doing exercises at least 20 mts. per day.

Individuals who are subjected to the following ailments should take medical advice before selecting your exercises.

- * Heart diseases
- * High blood pressure
- * Over weight
- * Diabetes
- * Arthritis
- * Those who are above 35 years and generally has not done exercises

Let us see why its important to do exercises to improve physical fitness.

You as an adolescent must be more conscious of the shape of your body, muscles, height etc, You are now completing the second and the last period of growth in life. At this very pleasant period of life you should know the advantages of developing your physical fitness.

- * Functioning efficiently without being tired
- * Develops the muscles necessary for efficient functioning of the motor skills of the body.
- * Achieves the ability to move the joints in their maximum range, by improving the flexibility of the joints.
- * Improves the ability to act immediately to prevent injuries
- * Gives the body a good shape reducing the excessive growth of muscles.
- * Prevents obesity by the deposition of adipose tissue.
- * A healthy appearance due to a healthy skin resulting from an efficient blood supply.

Figure 11.2 shows how you should exercise to prevent obesity.



Fig. 11.2 - A person exercising himself to reduce obesity.

If you improve your physical fitness by the exercises you perform, there is no doubt you will feel a great satisfaction. However, as future adults, methods of developing physical fitness, using special equipment that need more space and more time will be of little use due to the busy schedule of life prevailing in the present society.

If you can find out a form of exercise that will develop the physical and mental fitness it will be very useful for your future life. It will be very practical if you try to learn yoga exercises which is a part of our eastern heritage. It is a form of exercise that helps to maintain a healthy body and a balanced mind and also it needs no expense, space and special equipment.

You step out of the school to a very busy and unrelaxed society. At this age if you start yoga exercises it will be a very wise step for your future. "Yogasana" is a form of exercise that will help you to maintain a balanced body and mind for an efficient future. If you make "Yogasana" a daily routine you will be able to lead an active life because it develops every organ in the body and a steady mind. The first exercise "Soorya Namaskar" or worshipping the sun god is illustrated in figure 11.3 You can find out more about yoga exercises to make it a daily routine.

With the help of your physical education teacher prepare a series of exercises to be practiced daily. Find out how much you can contribute to improve the physical fitness of your family members. You will derive great satisfaction by helping them.



First stage

Twelfth stage



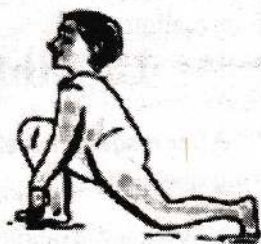
Second stage

Eleventh stage



Third stage

Tenth stage



fourth stage



Fifth stage

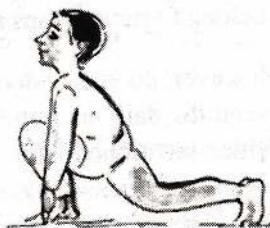
Eighth stage



Sixth stage



Seventh stage



Ninth stage

Fig: 11.3 - A diagram showing "Sooriya Namaskara"

12. Athletics and Games

After reading this chapter you will be able to answer the following questions

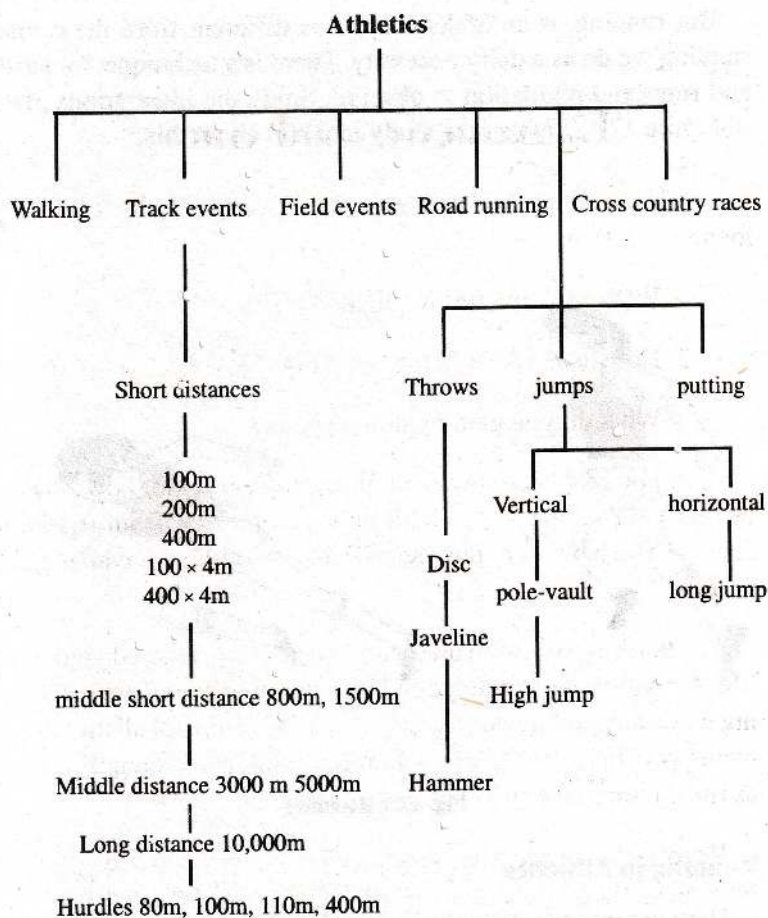
1. What are Athletics & games?
2. How does sports help your daily life?
3. What do you gain by doing sports?

Can you recollect how you, threw toys as a kid, how you ran behind your mother as a child, how you jumped from square to square? You have run, jumped and thrown without anyones guidance.

Just think as to how all these movements have entered your daily life. Activities like running for a bus, jumping over a ditch, throwing waste are not things, you can stop doing. Think of all the movements you do daily. Make a list of them and try to categorise them as runs, jumps and throws.

Recollect a sportsmeet you have seen or participated. Can you remember the various events the children participated in. 50m, 100m, long jump, high jump, shot put, throwing the disc etc., These too belong to runs, jumps and throws.

However, do you understand that there is a distinct difference between the daily activities mentioned early and the competitive activities mentioned later. The daily activities does not need any rules or techniques. But the latter needs techniques, rules and regulations to perform and needs a lot of practice for perfection. These activities identified as athletics have been learnt practically by you in grades 6, 7 and 8. The table below shows how these activities are divided into different groups.



Though in athletics these activities are grouped as above, according to the International Athletic Association definition athletics is defined as a collection of the four activities walking, road running, cross country races and track and field events.

Running

As we mentioned earlier running is a natural activity. We can define running as an activity inherited by man genetically during evolution. How many times have you run per day without your knowledge? Hence running is an essential activity in our daily life.

But running as an athletic event is different from the normal running we do as a daily necessity. There is a technique to master and rules and regulation to observe. Study the illustrations given in Figure 12.1. Let us now study in detail about this.

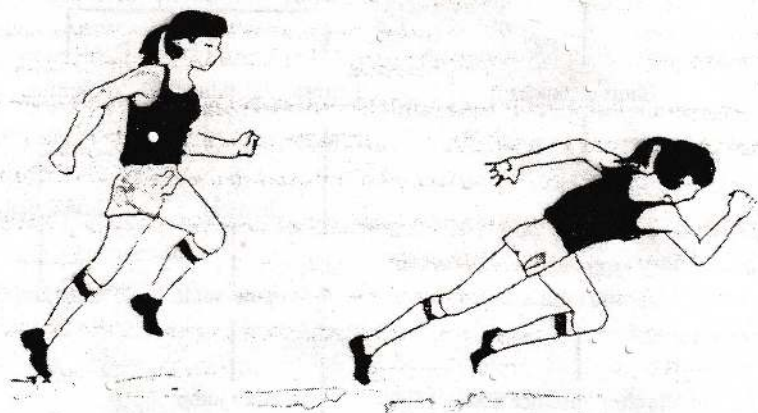


Fig. 12.1 Running

Running in Athletics

Here the running distance is completed within the shortest possible time. It depends on the runner's speed. The speed of the runner depends mainly on two important factors.

1. The stride length
2. The speed of striding or the number of strides per second

If you can develop both skills or one of the two you can improve your speed. To improve both these skills to gain speed and complete a distance at the shortest possible time there are basic things to be considered. They are correct movement of the feet, hands and correct position of the trunk.

The start

Figure 12.2 illustrates the positions of the start. In sprinting (short distance races) the start should be very forceful and powerful. Different methods of "start" are used to run different distances. For example, for races above 800 m the "standing", start is used, upto 400m the "crouch" start is used.

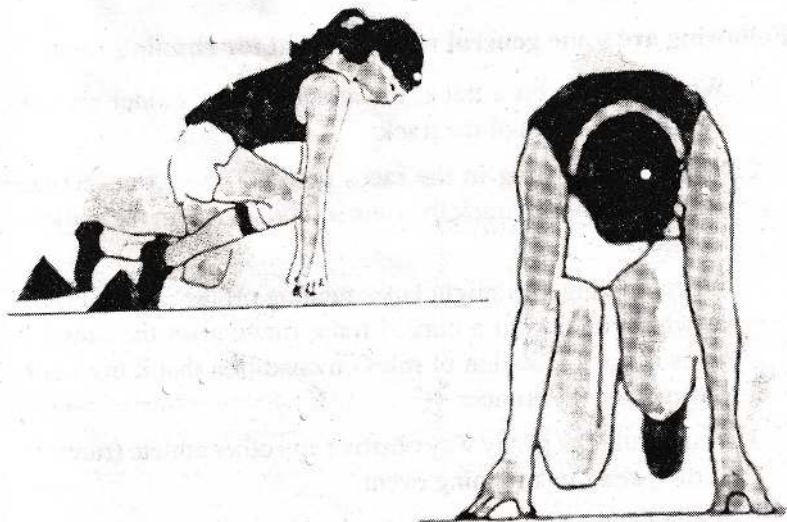


Fig. 12.2 The start

The commands given to these "starts" too differ. For the standing start the command given is "On your marks" and "go" or the pistol "fire". For the crouch start used for races upto 400m, there are three command stages. They are "On your marks", "Get" and the pistol "Fire" (go) and the positions of the crouch start also change with stage of the commands. The crouch start is again subdivided into three categories. They are bunch start, medium start and elongated start. When your teacher takes you for practical training you will be able to understand the differences and positions of different starts and commands. The most commonly used start for sporting is the medium start.

Finish of a race

The winner or the first person who cross the finish line is decided by the athletes torso (the trunk excluding hands, feet and head) crossing the imaginary vertical plane perpendicular to the inner edge of the finish line. Hence every runner should be trained to cross the torso first before any part of the body and also to finish at his maximum speed.

Following are some general rules relevant for running races.

1. When running on a track, the athletes left shoulder should face the innerside of the track.
2. When participating in the races upto 400m (100m, 200m, 400m) in a 400m track the runners should run in their allotted lanes.

When running, in straight lanes running off the allotted lane or when running in a curved track running on the outside lanes is not a violation of rules on condition that it does not obstruct another runner.

3. You should not in any way obstruct any other athlete (runner) participating in a running event.
4. A competitor who leaves the track voluntarily cannot reenter the lane and compete in the race. But if a competitor is thrown out due to some circumstances that particular athlete can join the race from where he was thrown out.
5. In races upto 400m the hands should be in touch with the ground at the command. "set".
6. You cannot touch the starting line or the ground beyond the starting line before the start.
7. When you take your position "On your marks" you cannot change your position or delay purposely to come into the set position or make false sounds and start or start before the gun. You will be given one warning for either of one these movements and at the second movement you will be disqualified from the race.

Jumps

This is also a natural activity like running. How popular are the leaps and jumps of Robin Hood and Tarzan among you. You love to watch these films because of the various activities they perform in the forest. Just think for a moment how useful these leaps and jumps are? Do you realize that they are useful in your day to day life.

From ancient times man has used jumps to display his strength. Gradually it turned out to be a competitive event and today it has become a very important event in athletics.

Accordingly today 4 kinds of jumps are included in athletic competitions. They are high jump, long jump, triple jump and hop step and jump. When categorizing athletics you must have understood that long jump and triple jump are horizontal jumps and high jump and pole vault are vertical jumps.

The most important factor in jumps is the distance you sail or the distance you move in the air. This depends on 4 important factors.

1. Speed of take off
2. Angle of take off
3. Height of take off
4. Air resistance

When you study physical education practically and theoretically you will be able to study further about these facts. A few important facts about each jumping event, need to be explained to you.

Long Jump

Figure 12.3 shows the various stages of long jump. The process of long jump can be divided into 4 stages. They are.:

1. Approach run
2. Take off
3. Sail
4. Landing

You will be able to understand these stages when you learn it practically.

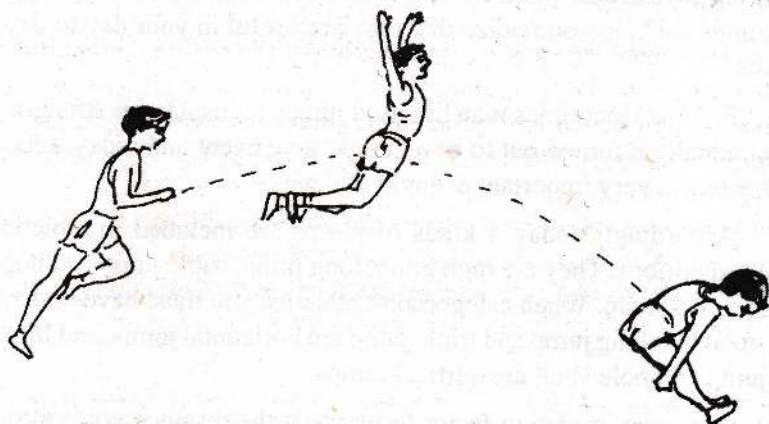


Fig. 12.3 - Long jump

Some rules relevant to long jump

1. When there are more than eight competitors for the event each competitor is given three chances to jump and the best 8 selected. The best eight are given another three chances and the winner is selected accordingly.
2. The following jumps are not recorded.
 - i. Touching the ground beyond the take off board.
 - ii. Take off outside beyond the take off board.
 - iii. Touching the ground outside the landing area, close to the take off board.
 - iv. After landing walking back across the landing area.
 - v. Jump with a summersault.
3. The distance of the jump is measured from the closest point to the take off board, to the point where the competitor touched when landing.

4. From the three trials the best jump is considered for selecting the place.
5. A competitor should start his jump within 90 seconds from the time his number was called.

Hop Step jump

The jumping process is similar to the 4 stages in long jump. But after taking off the first jump is a hop and the second is a step, the last is a jump as in long jump. First jump you take off and land from the same foot the second jump you step with the other foot and finally land with both feet.

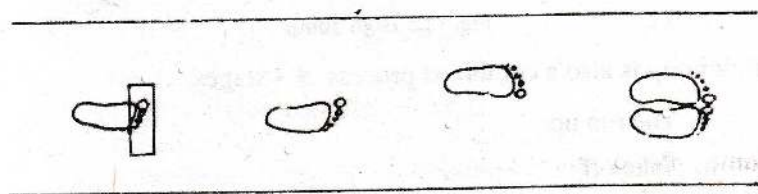


Fig. 12.4 How the feet touch the ground in Hop step jump

Rules relevant to Hop step Jump

All rules pertaining to long jump are valid. In addition the following rules are included.

- i. The hop, step and jump should take place in the correct sequence.
- ii. In these jumps, it is considered as foul if the other foot touches the ground.
- iii. Landing the take off foot first and landing the opposite foot secondly is a must.

High Jump

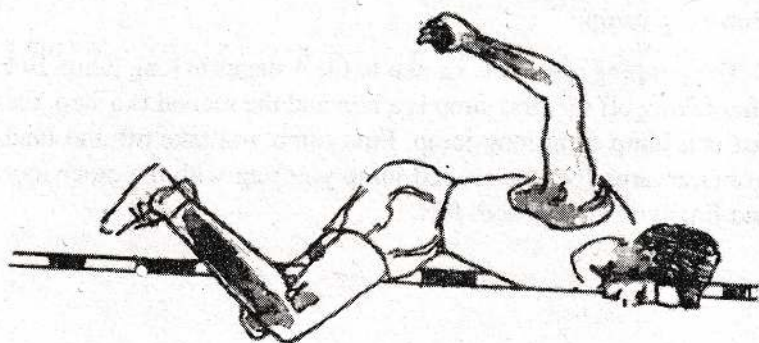


Fig. 12.5 High Jump

High jump is also a combined process of 4 stages.

- i. The run up
- ii. Take off
- iii. Sail
- iv. Landing

Different techniques are used for high jump.

They are

- i. Scissors
- ii. Eastern cut off
- iii. Western roll
- iv. Straddle
- v. Flop (fosbury)

It is accepted that more height could be achieved by using the straddle and the flop, out of these methods.

Rules specific for High Jump

1. After every round the lowest height the cross bar should be raised is two centimeters.
2. The athlete should take off with one foot.
3. After the competition starts, the competition area cannot be used for practice.
4. Causes for considering jumps as unsuccessful
 - i. Cross bar falling off the supports as a result of a jump
 - ii. Touching the ground (including the landing area) beyond the plane of the high jump posts before crossing the bar.
5. A competitor gets three chances to clear a certain height. He can skip a height without taking the third chance after one or two unsuccessful jumps and attempt the next raised height. At this instance the competitor gets only one or two chances to clear the raised height depending on the no of chances taken at the earlier lower height.
6. The jump should be taken within 90 sec. from the call. But finally if there are only two or three competitors this time will be increased to 180. Also if there is only one competitor left this time is increased to 300 sec.

Pole Vault

The only difference in this jump is that the jump is taken with the aid of a pole. The athlete takes the run up carrying a pole and takes the take off by planting one end of the pole in the vaulting box and rises up to cross the bar with its support.

This event is also divided in to 4 stages.

- i. Approach run
- ii. Planting in the vaulting box and take off
- iii. Crossing the cross bar
- iv Landing

Holding the pole should be studied specially because the grip is very important.

Rules specific for pole-vault

All rules for long jump is applied here. Some special rules for pole-vault is mentioned below.

1. After every round the minimum height to which the cross bar should be raised is 5 cm.
2. Before crossing the bar, the plane above the vaulting box and the ground opposite cannot be touched by any part of the body or the pole.
3. After taking off to cross the bar, the lower hand holding the pole cannot be taken off and placed above the other to change the grip. Also the hands cannot be slid up to change the place of the grip.
4. Palms or fingers cannot be taped or bandaged.
5. From the time your number is called the jump should be taken within 2 minutes. However if there are only 2 or 3 competitors left for the final round, this time will be 4 minutes. If there is only one player competing till the last the time is increased to 6 minutes.

Throws

Throwing is a natural activity like other events such as running and jumping. Recall how early man used pointed splints and poles to throw at animals to kill them. Now although we don't use pointed weapons for such purposes, think as to how many times we use the action of throwing for various purposes in life. When listing out the throwing actions you do within a day from the simple action of throwing a piece of paper. You will understand how important are throws in your daily life.

Different styles of throwing under various rules and regulations are included in athletics.

They are:

1. Throwing the disc. (discuss throw)
2. Throwing the javelin (javelin throw)
3. Putting the shot (shot put)
4. Throwing the hammer (hammer throw)

The hammer throw is not yet popular in Sri Lanka. However it is important to learn about the other throws.

A few general rules and regulations relevant to throws.

1. When there are more than 8 competitors for a competition, three chances are given to select the best three.
2. Before starting the competition, with the permission of the judges a competitor can take two trial chances.
3. Once the competition commences, one is not permitted to practice with or without equipment.
4. For a throw to be valid, the equipment should land between the inner edges of the lines marking the throwing area.
5. All correct throws should be measured from the close end of the point of landing to the inner edge of the arc or the stop board.
6. No competitor could bring their own equipment to use in the competition.
7. It is not permitted to bandage or tape the hand but two or more fingers can be kept together and bandaged.
8. Wearing gloves is not permitted.
9. The throw should be made within 90 seconds of the call.
10. Competitors are permitted to wear a belt to protect the spinal cord.

Throwing the discuss

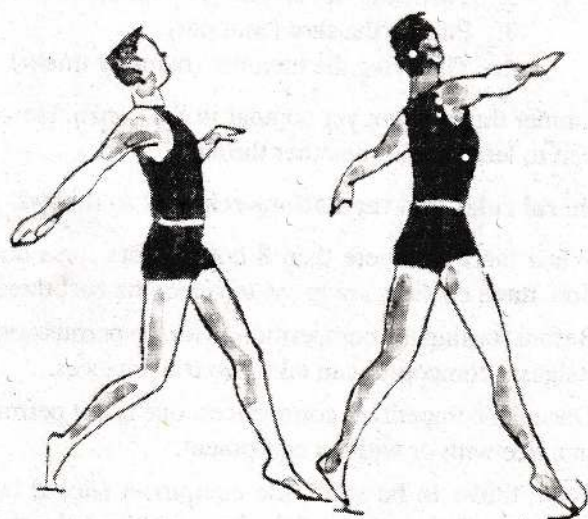


Fig. 12.6 Discuss throw

The process of throwing the discuss is also divided into 5 stages.

1. Holding the disc
2. Stance (ready position)
3. Rotating with the disc
4. Releasing the disc
5. Follow through.

The table below shows the different weights of the equipment used at school level.

Age limit	Boys	Girls
Under 15 yrs.	1.0 kg.	1.0 kg
Under 17 yrs.	1.0 kg	1.0 kg
Under 19 yrs.	1.5 kg	1.0kg
Open	2.0kg	1.0kg

The throwing area for the discus is shown in figure 12.7. The width of every line is 5.0 cm.

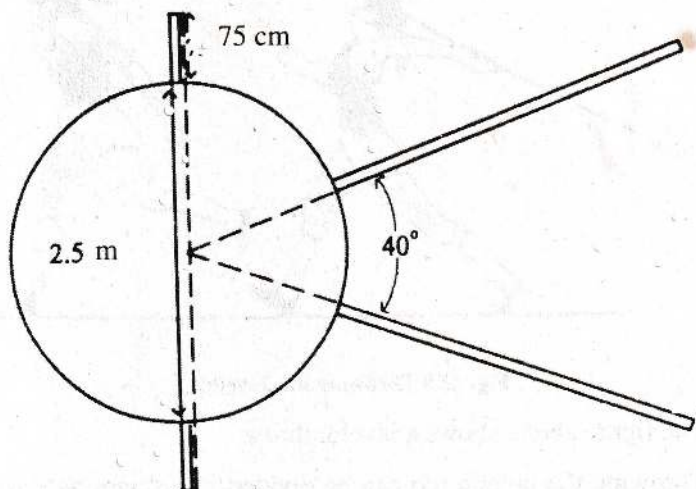


Fig. 12.7 The throwing area for the discus

Rules and regulations relevant to the discus throw

Apart from the general rules the rules mentioned below are used for this event.

1. The throw should be made after coming to a steady position in the circle.
2. Use of gloves and taping the palm is not permitted.
3. When throwing the disc a competitor can touch the inside surface of the ring but cannot touch the top of the ring or the ground outside the ring.
4. The competitor cannot leave the ring until the disc thrown by him lands. You should leave the ring after keeping at least one step to the rear half of the ring.

Javelin throw

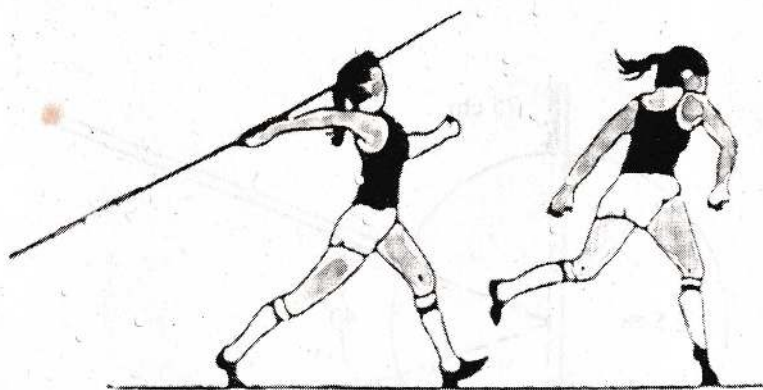


Fig. 12.8 Throwing the Javelin

The figure above shows a javelin throw.

Throwing the javelin too can be divided into stages as shown below.

- i. The grip (holding the javelin)
- ii. The approach (the run to make the throw)
- iii. The last 5 steps before the stance of the throw
- iv. Releasing the javelin
- v. Follow through

The table below shows the weights used at school level.

Age	Boys	Girls
Under 15 yrs.	600 g	600 g
Under 17 yrs.	600 g	600 g
Under 19 yrs.	800 g	600 g
Open	800 g	600 g

The diagram below shows the throwing area

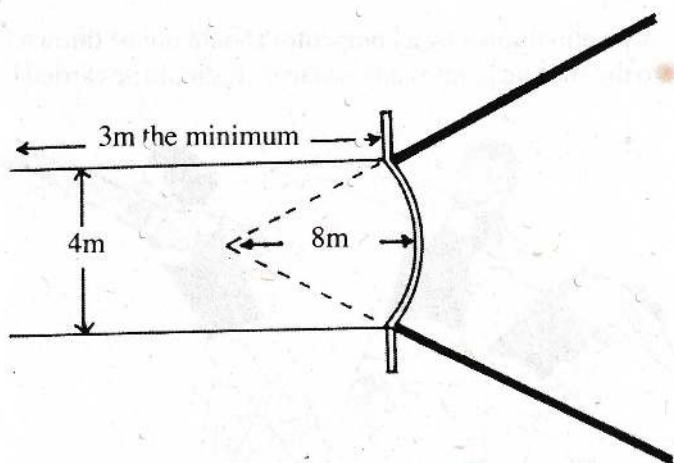


Fig. 12. 9 - The ground area used for the javelin throw

In this throwing area the width of the front arc and the two lines on either side is 7.0 cm. The width of the other lines are 5.0cm.

Rules and regulations relevant to the javelin throw

Apart from the rules governing the throws the following rules apply to this event.

1. The javelin should be held at the grip. It should be thrown over the shoulder or over the upper part of the upper arm of the throwing hand.
2. If a throw is to be valid the steel point should touch the ground first before the other parts of the javelin.
3. Before releasing the javelin no part of the body can touch the arc or the ground beyond.
4. When running to throw the javelin or at the moment of throwing turning back to the throwing area is a foul.

5. One cannot leave the throwing area before the javelin lands and can leave only after coming to a steady position behind the arc and the two short lines on either side from it.

* A javelin thrown by a competitor should not be thrown back to the starting point at any instance. It should be carried back.

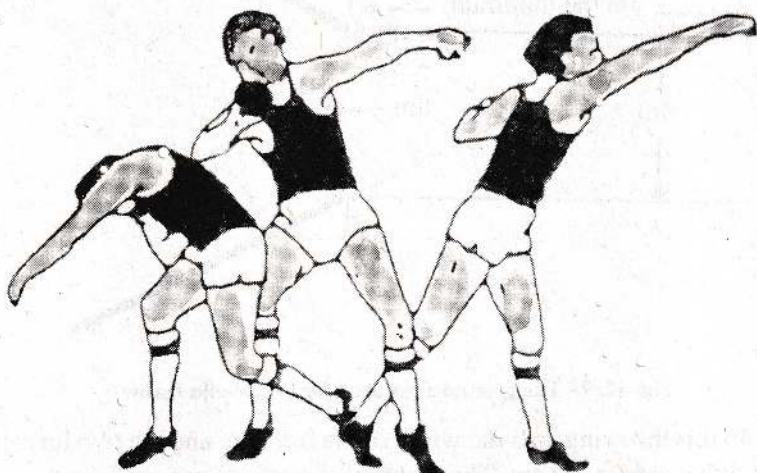


Fig. 12.10 Shot put

Putting the shot

Figure 12.10 shows the action of putting the shot

Factors that affect the distance of a put.

* Speed and angle of release

* The height of the shot and the air resistance at the moment of putting

There are two accepted techniques of the shot put

They are

- i. Perry 'O' Brian method
- ii. Rotating method

Like the other throws each technique can be analysed according to the different stages

- i. Stance (Ready position)
- ii. Power position
- iii. Release
- iv. Follow through

The table below shows the different weights at school level

Age limit	Boys	Girls
Under 15	4.00 kg.	4.00 kg.
Under 17	4.54 kg.	4.00 kg.
Under 19	5.44 kg.	4.00 kg.
Open 7.2	6 kg	4.00 kg

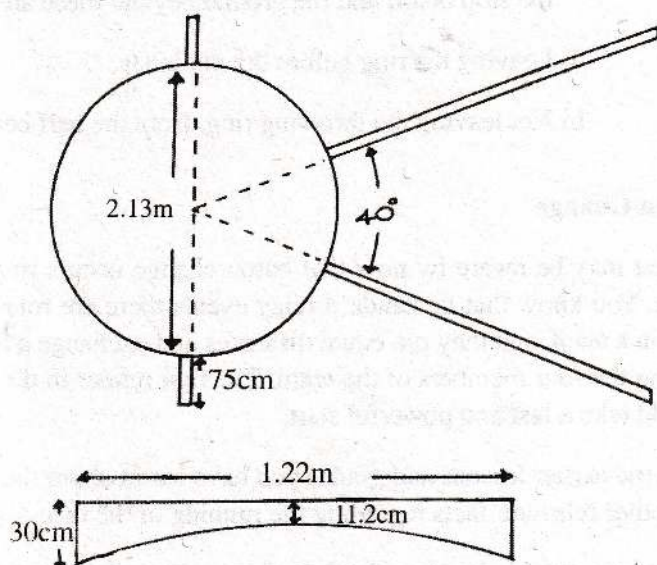


Fig. 12.11 - The throwing area of the Put Shot

The following rules govern this event along with the general rules relevant to throws.

1. The putting of the shot should be done after coming into a steady position in the ring. It should be thrown with one hand once it is held near the shoulder. A competitor after taking the stance the put should be placed under the jaw at the base of the neck above the clavicle. Till it is thrown the position of the hand cannot be changed. The throwing arm cannot be brought down or behind the shoulder line.
2. A competitor can touch the inner surface of the iron ring or the stop board.
3. A put (throw) will not be valid under the following conditions
 - i. Any part of the body touching the top of the ring or the stop board and the ground beyond these areas.
 - ii. Leaving the ring before the put lands.
 - iii. Not leaving the throwing ring, from the half behind.

Baton Change

You may be aware by now that baton change occurs in relay races. You know that in standard relay events there are four runners in a team, and they run equal distances and exchange a baton among the four members of the team. The first runner in the race should take a fast and powerful start.

In the earlier lessons and grades you have learnt about the start and other relevant facts regarding the running of the race.

You are provided with an introduction to the techniques of baton change and if you participate in relay races you should practice and train yourself a suitable method.

Techniques of baton change

Visual method

(taking over the baton while

looking at the baton)

eg. 4 x 400 m relays

Non-visual method

(taking over without
looking at the baton)

eg. 4 x 100 m relays.

Non-visual method is made in 3 ways.

1. Outside change
2. Inside change
3. Mixed change

Visual method

This is used in 4 x 400 m relays.

The incoming runner is tired when approaching the receiving runner. So the receiver should look at the runner running towards him and slowly run forward to receive the baton. Giving and receiving of the baton should be done with the left or the right hand.

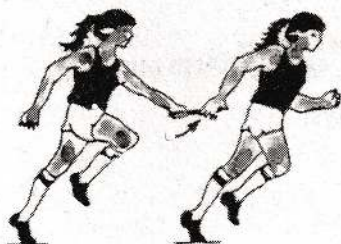
Receiving the baton can be done in two ways.

1. Open palm (giving the baton with a downward sweep)
2. Under arm/lowered palm (giving the baton with a upward sweep)

Non-visual method

This method is used in the 4 x 100 m relay races. When the incoming runner reaches a definite point in the track, the receiver too starts racing forward in the same direction gaining speed. As the head is inclined forward he will not see the baton or the incom-

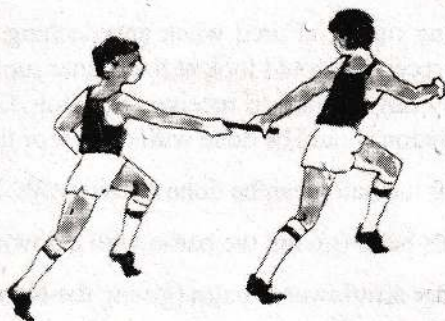
ing runner. When the two, approach each other the receiver extends his hand to a signal given by the runner, to receive the baton. The giver gives the baton and the receiver who continues to run forward receives the baton. Here the speed of the two runners does not break, though a baton change takes place.



(a) Under arm method



(b) Open palm method



(c) Visual method

Fig. 12.12 Baton change

Non Visual change - Outside change

The baton change is done towards the outside of the track from the left to the right hand. It could be done with the open palm or the under arm method.

Outside change - Under arm method

The receiver extends the right hand back, fingers pointing down with a wide arc between the thumb and the first finger. The giver with the left hand gives the baton with an upward sweep to the right hand of the receiver. See the diagram showing the under arm change.

Out side - Open palm method

The receiver extends the right hand back with the palm of the right hand turned up. The giver gives the baton in the left hand to the receivers right hand with a downward sweep. See the illustration, open palm change.

Inside change

Here the baton is given with the right and received by the left. The change could be done with the open palm or under arm method but this method is not used very much.

Mixed change

This is a combination of the outside and inside change method. This is mostly used to run the 4 x 100m relay in a 400 m track. The starter runs with the baton in the right hand and delivers it to the left hand of the receiver. He in turn gives it to the right hand of the third runner and the last runner receives it in his left hand.

Rules and regulations relevant to the relay races.

Rules governing the start, run and finish in normal flat races are valid to this event too. Apart from these general rules the rules and regulations given below, apply to relay races.

Baton

Length 28-30cm

Circumference 12 - 13cm

Weight should not be less than 50g

Baton should be hard with a hollow and the surface should be soft.

Exchange Zone

Direction of run

10 m Extra	10m	10m
------------	-----	-----

The runner should stand on this line.

1. The baton should be carried in the hand from the start to the finish.
2. The baton should be exchanged in the 20m exchange zone. At the time of exchange the baton should be in the exchange zone and whether the runners are in the exchange area is not taken into consideration.
3. If the baton is dropped the runner responsible for it should pick it up.
4. In the 4 x 100 m relay races the runners should run in their allotted lanes. In the 4 x 200 and the 4 x 400 races the first runners should run in their lanes till they cover three half curves of the track.
5. The runners should remain in their respective lanes in the exchange zone. In a 4 x 400m relay in a 400m track, when the second or the third runners are running in the first lane the receivers should remain in the exchange zone according to the order the incoming runners are finishing the first 200 m of that round.

At the event of runners running in the first lane of the track the receivers should enter the exchange zone in the first lane to receive the baton according to the order their team members are running.

6. After giving the baton the runners should remain in their lane till all the other members of the other teams leave the exchange zone.

7. After delivering the baton the receiver cannot be given any support in the way of pushing or in any other way.
8. A team comprises of 4 members with 2 extra members. The extra members could be two members mentioned in the application or any two team members of the team possessing a number for the events of that day. After a competitor compete in one round and if a substitute is used instead, the former competitor cannot compete again.

Judging the race

The judges of a relay race judge a competition according to the rules and regulations mentioned above. Accordingly you should be thorough with the rules, if you get an opportunity to judge.

Apart from the judges used for normal running races two additional judges are used for each zone to check the boundary lines of the exchange zone.

Important facts to be considered when judging relay races.

- i. Are the competitors carrying the baton from the start to the finish?
- ii. Does the exchange of the baton take place in the exchange zone?
- iii. If the baton is dropped was it picked up by the same player?
- iv. Are the runners running in their lanes?
- v. Are the other runners obstructed whilst running or at the baton exchange?
- vi. Is any additional support given to the members?

Organized Games

By now you must have participated in games like Volleyball, Netball, Elle or Cricket. You must have contributed to these either by witnessing or participating in these matches.

You would have seen that these matches are being conducted in courts prepared according to rules and regulations. Think of the way they are being played. Aren't they activities performed after a formal long term training? These are called organized games.

At the moment there are many games so conducted at school level. Given below is a list of such games.

Volley ball	(Girls/Boys)
Net ball	(Girls)
Foot ball	(Boys)
Elle	(Girls/Boys)
Physical training	(Girls/Boys)
Gymnastics	(Girls/Boys)
Badminton	(Girls/Boys)
Table Tennis	(Girls/Boys)
Basket ball	(Girls/Boys)
Hockey	(Girls/Boys)
Swimming	(Girls/Boys)
Soft ball Cricket	(Girls/Boys)
Boxing	(Boys)
Cycling	(Girls/Boys)
Body building	(Boys)
Tennis	(Girls/Boys)
Wrestling	(Boys)
Chess	(Girls/Boys)
Kabadi	(Girls/Boys)

Do you remember that you learnt something and enjoyed by participating or watching these games? You must have realized that the players enter the game delightfully and play with very good cooperation among each other while obeying the leader.

Apart from the chances you get to build a healthy body for a healthy life, you get an opportunity to be a member of a good society formed as a result of the social and ethical qualities developed.

You know that no one who enters the sports field does not separate themselves according to cast, race or religion. Hence as Sri Lankans who anticipate national and religious harmony these games help us to achieve those objectives.

Furthermore you must have seen at the end of a match though one team loses and the other team wins the losers accept defeat cheerfully and congratulate the winners. What a great human quality is this

Hence, participating in organized games results in a virtuous wellbeing personally as well as generally the society at large.

You as a student of grade 9 is expected to participate in at least two of these games mentioned above.

13. Adolescence

By the year 1996 1.5 billion of the world population, and 6 million of the population of Sri Lanka consisted of adolescents like you. This chapter may help you in your adolescent stage to get an understanding of yourself and also to identify the strengths you have in you. By making use of these strengths developmentally you will be entrusted with the duty of making your future as well as the future of your own country a pleasant one. The fulfilment of this duty through a youth force of 6 million will not be a difficult task.

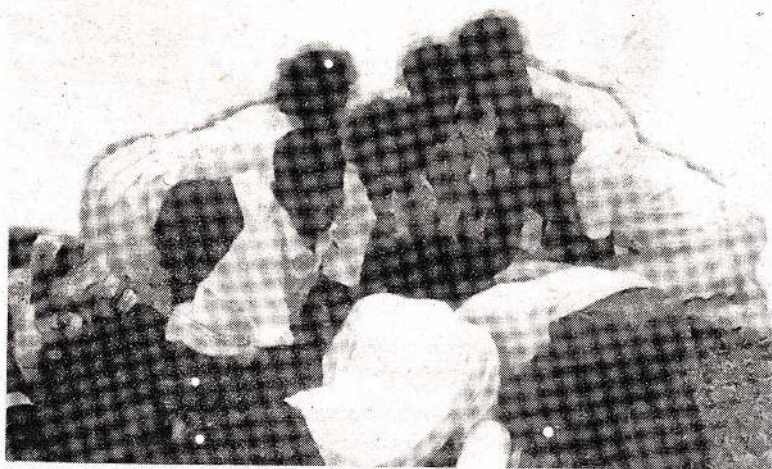


Fig. 13.1 - The future of the country is entrusted on you.

Adolescence and you.

Here we are addressing those in the age group of 10 to 24 years as adolescents. Adolescence is further divided as follows.

10-14 years age - early adolescence

15-18 years age - middle adolescence

19-24 years age - late adolescence

To which of the above stages do you belong? However your group is important, not merely because of the large numbers. There are a number of other factors?

Being in your adolescence you are a special person:-

What are the special characters of those of your age? Given below is a list of the responses received from a group of adolescents, for the above questions.

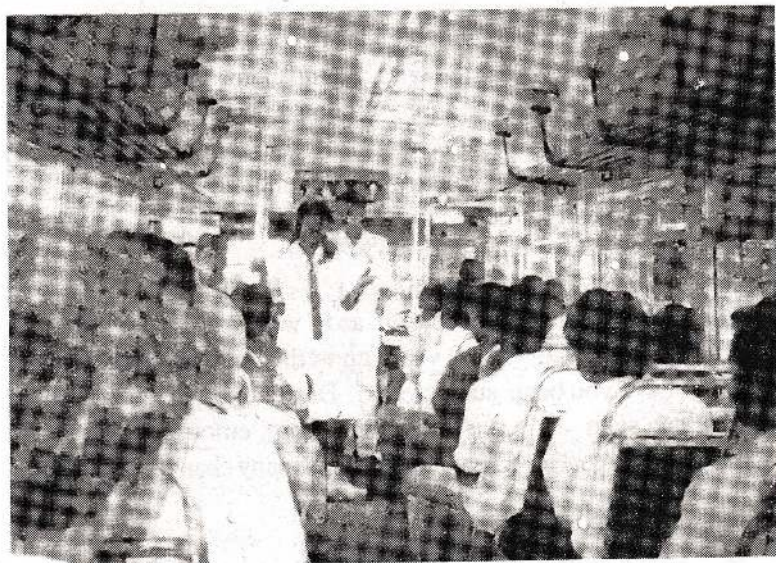


Fig. 13.2 Being in your adolescence you are a special person

What are the special characters of those in your age? See whether you can identify some of them.

- * Being happy.
- * Spends the time enjoying
- * Independent
- * Inclined towards aesthetic activities like singing, music and dancing.
- * Being active.
- * Being socible

There are other characters that are not seen in the picture.

- * Being flexible.
- * Likes to face challenges
- * Revolting
- * Likes to work cooperatively
- * Critical

How far do you agree with the ideas expressed in this list. Mark a against the facts you agree with, count them. This list may also contain, things you do not agree with also. This is not a complete list too. It is not necessary that all of you should possess these characters. Findout from your own experiences the reasons for presenting each of these facts.

Many changes

Let us consider another reason as to why you are important as a group. From the age of 10 years up to this period, to how many changes have you been subjected to? During this period, a number of changes such as in the physical, mental, emotional and social aspects take place. Never in your life has so many changes taken place.

Changes in the body.

Think of 3 changes that occured in your body during the last 4 years.

Changes in the body

1. Growth in height
2. Increase in weight
3. Change in shape of the body

In addition to these three you may now be reminded of many other changes. See the list below according to whether you are male or female.

Many of these changes are related to the reproductive function.

Female

- The skin becomes brighter
- Sometimes, pimples appear on the face
- Breasts enlarge
- Hair appear in the region of the sex organs and in the armpits
- Hips broaden
- Thighs enlarge
- Sex organs enlarge
- Vaginal secretions form
- Menstruation commences

Male

- Beard appears on face.
- Sometimes pimples appear on face.
- the larynx protrudes forward
- voice roughens.
- Muscles develop.
- Shoulders broaden
- Hair appear, on the armpits and chest around the sex organs
- Sex organs enlarge
- Ejaculation of sperms commences.

Hence Many of these changes are related to the reproductive function. Hence these are commonly known as secondary sexual characters. The testis in the males and ovaries in the females are considered as the primary sex organs. In addition to the above mentioned external changes many changes take place in the interior of the body too. We will consider them later.

There is something special in the increase in height and weight that take place during adolescence. That means, this happen very rapidly and shows as a growth spurt. What is special here is that a change is seen between males and females. Generally the growth spurt of girls commences about 2 years before that of boys. In girls it commences at the age of 10 and ends up in about 16 years of age. In boys it commences at the age of about 12 years and ends up in about 18 years. Girls at the age of 10 are bigger in size than the

boys of the same age. However when the growth spurt of boys comes to an end, they are bigger in size. They are more taller and heavier.

Due to the prevailing myth that all these changes should take place in every person during the same age period, most children look at another persons height with sadness. There is no necessity for this at all. The growth of a person takes place according to a pattern which is inherent to him or her. Various factors such as heredity, nutrition condition, hormone activity etc influence growth.

Attainment of age.

During this period where development is very rapid a special phenomenon that takes place is the attainment of age. In the case of girls this is also known as puberty or becoming a big girl. This is a result of a series of changes taking place in the reproductive system within the body. In the case of girls after the ova mature with the development of the ovaries, for the first time these ova starts being released. When a foetus is not being formed by an ovum, the uterine wall breaks off and a certain amount of blood leaves out from the body through the vaginal opening. When this happens for the first time it is known as puberty.

You may be surprised to hear that boys too attain puberty. However along with the internal changes, the production of sperms and the discharge of sperms to the outside, takes place for the first time. However this is not a visible occurrence as in the case of girls.

The attainment of age in the case of a girl is an important milestone in her life. This is why our ancestors gave great social value to this. We can think that while fulfilling certain customs and traditions ceremonially they may have made this an opportunity to give the society the message that they now have a young girl whose age is right for marriage and a message to the girl to say she is a big girl now, having the potential to become a mother and hence should act very thoughtfully. Isnt this second message 'valid' for today too.

Changes in the mind.

Can you recollect some new mental abilities you gained during the last four years? Really speaking you have developed a number

of abilities you did not possess during your childhood. Now the curriculum in the school has been prepared to suit these new abilities.

Now you show an interest to find out information about what is happening and what has happened in the society. For this purpose you show a liking to read the newspapers, books, magazines etc and also collect information from various sources and media. Because of this you are aware to the various things happening in the home front, in the society and also in the country.

During your younger days you could understand only simple incidents. Now you can look at these from various angles and get an understanding.

Now you have mathematical abilities and mechanical abilities that you never had before. You like to investigate the manner in which machines work. Now you realize that the aeroplane flying at a distance or the moon in the sky seen so far away are not of the size we see but very much larger objects. In your young days when you did not understand this you may have even cried asking for the moon. Now you have the strength to understand what is expressed by symbols. Look at this problem.

If $x = 2$, $y = 3$

What is the value of $x + y$

Now you can understand the symbols and signals denoting various ideas. Sometimes people of your age communicate with one another using "secret languages" because of this ability. This exchange of ideas in a way adults cannot understand, is a big way of enjoyment for you.

Social changes

Read the incident given below.

The story of Sarath

Sarath is a 16 year old youngster. He is studying in a 'big' school in the town. He joined a 'clique' of his own age. The youngsters in this group were inclined to smoking, to see films often and to meet

with his 'clique' of friends a way from home till late in the night. Sarath too got inclined to this behaviour soon.

Sarath's father did not approve this change in Sarath. Therefore he was prohibited from leaving home in the nights. However in the pretext of going to classes, Sarath got addicted to drugs. His education came to a standstill, finally his schooling stopped. He started stealing money from home and even started quarrelling with his mother asking for money. When his addiction to drugs behaviour was revealed he was referred to a doctor for treatment.



Fig. 13.3 The possibility of getting inclined to "risky" behaviour is great.

Questions

1. Why did Sarath get inclined to the behaviour of the others in his clique?
2. What would have been Sarath's expectation by getting accustomed to smoking, watching films and staying away from home till late in the night?

3. How did Sarath show his dislike towards his fathers authority?
4. What are your views about Sarath's decision to associate with the clique of friends' stated in the paragraph?
5. What lessons have you learnt from Sarath's experience?

Compare the answers given by you for the above questions, with those given below.

The social changes that take place during this age are given by these. These are,

- * Trying to move away from parents/family members
- * Becoming more obedient/agreeing to one's own click of friends.
- * Revolting against authority.
- * Trying to imitate adults.

Probable views that may come up as answers.

1. To get accepted as a member of the clique
2. May have thought that he would get a great amount of freedom.
3. Through getting inclined to drugs.
4. It is an unsuitable/unwise decision.
5. That he should take intelligent and independant decisions.

A change in emotions:

During this period, along with the mental, social changes that take place in you, it is not surprising to see a change in your emotions too.

Here are some ideas expressed by a few parents of grade 9 students, regarding their children.

Our son gets angry for the slightest thing. He does not have any patience.

Our one starts big tasks. If there is even a small drawback he will immediately throw it aside. I am the one who complete it.

We cant say anything to Preethi! Like a baby she will cry for anything - She was not so when small.

How many days did Nimal's father ask him to take a hair cut. He is growing his hair because the friends are doing it.

Our son has pasted pictures of that actor all over his room. Our son dresses, walks and does everything like him.

All these show the manner in which the adolescents fight with their new emotions.

- * Restlessness
- * The liking to face risky conditions.
- * Arriving at decisions.
- * Gets hurt easily.
- * Very attached to the clique.
- * Goes against the authority.
- * Experimentation, curiosity.

The arising of new emotions such as love affection and attraction may be a problem to you during this time. All these days this would have been something unfamiliar to you.

Your social relationships that were confined to your mother, father and other family members have gradually widened now. You may seek the association of new friends. During the early adolescent age, you are often inclined to associate only girls if you are a girl or if you are boy you prefer to associate only boys. However this may gradually change over to the opposite sex. Your attraction towards them is a natural thing during this age. This type of emotional attraction may sometimes be wrongly thought of as "love". Due to this you may get various accusations from the adults. You may get into difficulties too. Confusing 'attraction' with love, leaving room to take the relationship further, having sexual relationships, starting love affairs which, would result in your future education and development come to a standstill are extremely unwise acts. It is very important to remember that if you do not control these emotions properly, there are various individuals in the society, who would try to drag you to wrong things.

What are the challenges you face?

Taking to liquor and drugs.

Very, favourable qualities such as, curiosity, experimenting new things, going in search of new experiences are some general characters of those in your age. Also getting into Cliques with those of the same age and holding similar views is another character of children of your age. There may be countless number of instances where others in your group tried to drag you to make you go astray.

In your age there is also a tendency for you to listen to the members in your clique rather than to the parents. Getting inclined to cigarettes, liquor and other forms of drugs is one such thing. Even though belonging to the clique it is important to safeguard your independence. When the others in your clique try to drag you to something you do not agree to, your inability to declare your objection towards it could be regarded as a weakness or drawback in your personality.

Conception during adolescence

It is a natural thing for emotions like love to develop during adolescence. Similarly the attraction you develop towards those of the opposite sex during this time is also natural. The number of young lives that confuse this 'attraction' with love and fall into trouble are so many. Although emotions like love are natural things for you, you should be very alert about the actions you take in relation to this. You may be faced with adverse results by resorting your behaviour to an uncontrollable state. Sexual relationships without any permanent foundation for the future and without any responsibility regarding the outcome, may result in unexpected conceptions or pregnancies. As a remedy for these some even resort to dreadful decisions such as getting abortions done. How many young lives are destroyed by such means?

Suicide

Going through a highly impulsive time period, you sometimes face situations where you take very short sighted and instant

decisions based on your emotions and selfpity. Also getting frustrated easily even for the slightest thing is a character of those of your age. For example you may have heard of or seen adolescents who have committed suicide over things like coming down an examination, when some weakness or wrong in a person is shown to him or her, when the girl/boy whom you like turns to another and so on. Widening the ways of finding enjoyment and pleasure, increasing the diversity or variety of friends you associate will give a support to you under such situations.

Being subjected to rape

Today in our country among adolescents a large number are subjected to various sorts of rape? Not only adolescent girls but boys too are subjected to various sorts of sexual abuse. You can safeguard yourself from such mishaps by being alert about these, by being aware of instances, places and other ways of encouraging these and taking steps to avoid these. It should also be remembered that these adolescents are subjected to rape not only sexually. Many are the instances where you are being used by these people involved in various vices, and opportunis to fulfil their intentions you should use your wits to escape such instances. It is important that you remain alert to such instances and that you should have the presence of mind so as not to get caught to such people and such situations.

What are your requirments?

During this stage where you are subjected to rapid physical, mental, social and emotional changes you may have special needs too. Prepare a list of your needs. Let us consider a few of such needs.

Nutrition

In order to maintain this rapid physical growth, you pay special attention to the importance of taking balanced meals. Also it is important that during this period, there should be more protien, calcium, iron and vitamins in the food consumed. It need to be specially mentioned about girls of this stage. Due to the blood that

is given out during menstruation it is important that they should receive more protein, energy and iron. If not they will easily be subjected to anaemia and their growth too will be weakened.

Sports and hobbies.

Exercise is essential for your muscles to grow properly and also for the proper functioning of the blood circulatory system and other systems. You can get this exercise by participating in sports or doing the work in the house. Our youngsters show a tendency to spend their time watching television or listening to the radio during a greater part of the day. How favourable will it be to your body and mind if you engage in a sport. Instead of staying in one place and watching others play?

Counselling: Those in the adolescent stage, being rapidly subjected to various emotional conditions are faced with many problems. Even though adults consider these as very simple things for those in the adolescent stage these appear to be very serious problems. Various frustrations regarding the body, various misunderstandings among members in the clique, misunderstandings with parents, love affairs etc, may be great problems to them. If you have somebody with whom you can confide in your problem, if there is someone who will listen to you and empathise with you during the moments it would be of great consolation to you. The best place for this is your family. If a suitable environment is there where you can openly let out your emotions, like for example "Amma? feel so sad! "I am so hurt over an incident" then the tendency for us to go astray could be reduced to a great extent. It is important that adults too become thoughtful in building up such closeness and affection. When this does not happen and supposing there are individuals or centres to which such affected people could turn to, and if these individuals could turn to these people instead of blaming them, these young lives could be saved from acts of violence and suicide.

When selecting a person to discuss your problems it is important that you should be careful. It would be more suitable if that person is one who.

- * Listens to you
- * Accepts you as you are, instead of categorising you as good or bad.
- * Can understand you.
- * Is reliable to you.

What are your special abilities?

The special abilities one has during his or her adolescence are so many. Given below are some of them. columns 2 and 3 indicates instances where they are used positively or negatively. respectively. If you have friends who conform to the behaviour patterns, write their names in the relevant place.

Table 13.1 - special abilities during adolescence.

Ability	positively used	Negatively used
* Creativity	<ul style="list-style-type: none"> * Creative writing of songs and drama * Organising various social welfare work 	<ul style="list-style-type: none"> * Use of indecent words * Going to see indecent films
* Experimenting	<ul style="list-style-type: none"> * Doing innovative work 	<ul style="list-style-type: none"> * Consuming Liquor * Trying out sexual behaviour Indulging in risky behaviour
* Likes to face challenges	<ul style="list-style-type: none"> * Mountain climbing, Sports competitions 	<ul style="list-style-type: none"> * Driving at high speed * Indulging in risky behaviour
* Qualities of a role model	<ul style="list-style-type: none"> * Social cleansing * Involves in activities against social injustice. 	<ul style="list-style-type: none"> * Inclined towards violence
* Leadership and participation	<ul style="list-style-type: none"> * Social service, protecting the environment, shramadana and other innovative work 	<ul style="list-style-type: none"> * Frustration sabotage and evading
* Intelligent	<ul style="list-style-type: none"> * development work Planning of 	<ul style="list-style-type: none"> * Rebellious
* Dedication	<ul style="list-style-type: none"> * Shramadana, Explorations etc 	<ul style="list-style-type: none"> * Expects, Instant, solutions, evading

See column 3 of this table. Using your abilities in a negative way may result in your creativity becoming blunt. Being ignorant of the results, adverse results such as weakening of your personality may occur. However by making use of your inherent abilities in a

positive way you are able to win the challenges you face. What are the challenges you are faced with in your life? Identify the strengths you have within you, to face these challenges and work for them. Develop these strengths further. By this means you will be able to stand out as a clever person. You will be able to develop your self esteem by developing your own strengths positively.

I am an adolescent

As an adolescent you may have now gathered a considerable understanding about yourself. You may be aware of the changes taking place in your body and mind. Various emotional and social changes too take place during this period. Through a self evaluation find out as to how relevant these are to your personality. From among these four aspects how many of the changes mentioned here influence you and how did they influence you. How did you respond to these changes? Did you face them successfully? Were there problematic instances.

Examples:

- * Was the change in shape of your body a problem to you?
- * Or did you accept it as a natural change.
- * When associating the friends in your clique, how far do you keep your independence?
- * Did you give permission to those in your clique to take decisions on your behalf?
- * Were there instances where you were unable to understand the new emotions that arise in you.

You have newly acquired a great deal of abilities: Applying these abilities developmentally, for your future happiness and advancement is your responsibility. The beautiful butterfly emerging from its cocoon, beautifies its surroundings. While flying from flower to flower sucking the nectar it pollinates the flowers too. You can reap the benefits of a beautiful and worthy life only if you make use of your abilities positively.

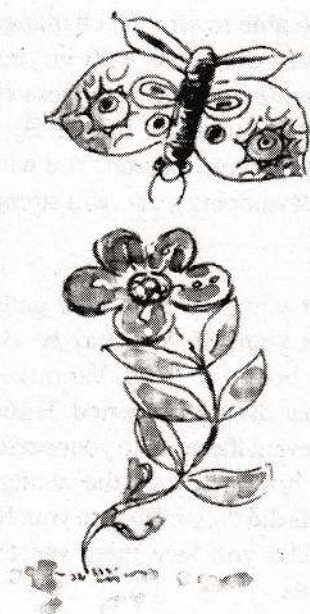


Fig. 13.4

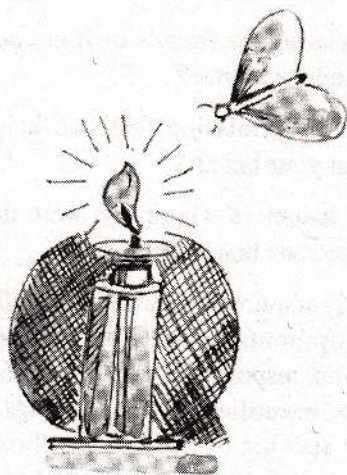


Fig. 13.5

The moth that cannot understand the danger in a flame gets attracted more and more towards the flame and destroys its life from the same flame. If we fail to differentiate what is dangerous from among the various things around us, like the moth that is attracted towards the flame on its own wish, you too will make your worthy future gloomy. From the decisions you take during your adolescence what is your choice? Be a "butterfly" (Fig. 13.4) or be like a "moth" (fig. 13.5). We leave it to you to take the correct decision.

14. Sexuality and Reproduction

You may have already heard about the manner in which all the biological systems in your body are designed and adapted such that your existence, and proper functioning are assured. Your reproductive system is mainly designed such that more than ensuring your existence the biological action related to the maintenance of your kind is carried out. That is such that the production of young and their maximum protection is ensured. For this purpose, your reproductive system is uniquely designed, both structurally and physiologically. Your sexuality is important in providing the strength and power to transform the reproductive function into something a pleasurable, pleasing and good.

What is sexuality?

Sexuality means everything related to our femininity and masculinity. This means, the expression of our figure, behavioural pattern, our abilities and every other thing differ according to our femininity or masculinity. During infancy there does not appear to be much of a difference between male and female. However as you reach adolescence, sexuality develops gradually. A maximum growth is shown during this adolescent age you are going through now.

It is important that we develop favourable attitudes as regards sexuality. It is clear that sexuality,

- * Is a natural thing
- * Is something favourable.
- * Should be something that should take place with responsibility.
- * Should be devoid of fear or shyness
- * Should be preceded by respect, attention and love

Also when expressing our sexuality there should not be any doubt that something good and that nothing bad will happen to the other. It is important that during this period you should have an understanding about the feelings you have towards those of the opposite sex. Is it a permanent affection? Or is it only an attraction?

When expressing your sexuality in a positive way, you are not only making the world a pleasant one but you are also being made a 'complete individual'? Sexuality has often lead to creativity .

When talking about sexuality it is important that we remind ourselves about the traditional roles of a woman and man.

When talking about a man or woman, don't we have in our mind some definite idea about the inherent behaviour, duties, professions and all other incidents related to them? Eventhough not happening traditionally even in the present society there are instances where the woman is considered only as a 'sex' object or as yet another 'machine' used for household work. Let us consider how the roles differ, traditionally.

Women

- * Cooking in the house
- * Taking to professions such as teaching
- * Participates only in sports meant for women

Men

- * Earning
- * Taking to professions such as engineering and medicine
- * Participates only in sports meant for men

Complete this list according to your knowledge. Do these roles remain the same in the present day too? Do you know of women coming under column two or men coming under column one? If this is so, what should be done now is the selection of roles according to situations and not according to traditions? If in the house both husband and wife are earning, how favourable will it be if both get together and prepare their food? Shouldnt an individual select a profession suitable to him? and not be confined to professions that a traditionally laid down? You who will grow out to be adults in the future will have to adjust these in a manner that would

be useful and favourable to the society you are to create. Then whether you are male or female, instead of confining your abilities and likes to the role of a man or a woman, but by developing them you will undoubtedly get great freedom and satisfaction.

Reproductive function

It was mentioned earlier that your reproductive system is uniquely designed to produce young or for the function of reproduction. Let us discuss further about this. What are the important features of the female reproductive system? What is the special function of it?

These are some of the special functions of the female reproductive system.

- * Production of ova
- * Transfer these ova to a place suitable for the formation of an embryo.
- * Liberation of the ovum if it does not get fertilized.
- * If the ovum gets fertilized to place it in a very protective manner, provide with the necessary nutrition, nurture it and release it from the mother in the correct time (giving birth to).
- * Providing nutrition and protecting the delicate infant until it receives some independence.

In order to fulfill all these, the woman is physically, physiologically and mentally adapted. Understand with the help of the simple diagrams given below, the manner in which the parts of her reproductive system and its functioning are designed for this purpose.

Female reproduction system

Given below is a diagram of the female reproductive system, the names of its parts and their functions.

The main functions of the different parts of the female reproductive system are described as follows.

- Ovary – Production of ova and the secretion of the female sex hormone.
- Fallopian tube – Directing the ova to the uterus and fertilization with the sperm.
- Uterus – Implantation of the fertilized ovum (embryo) and embedding it.
- Vaginal opening – Insertion of the sperms through the penis to the vagina and emergence of the fully grown embryo

- | | |
|---------------------|--------------------------------|
| (1) vaginal opening | (5) fallopian tube |
| (2) vagina | (6) Ovary |
| (3) cervix | (7) Inner lining of the uterus |
| (4) uterus | |

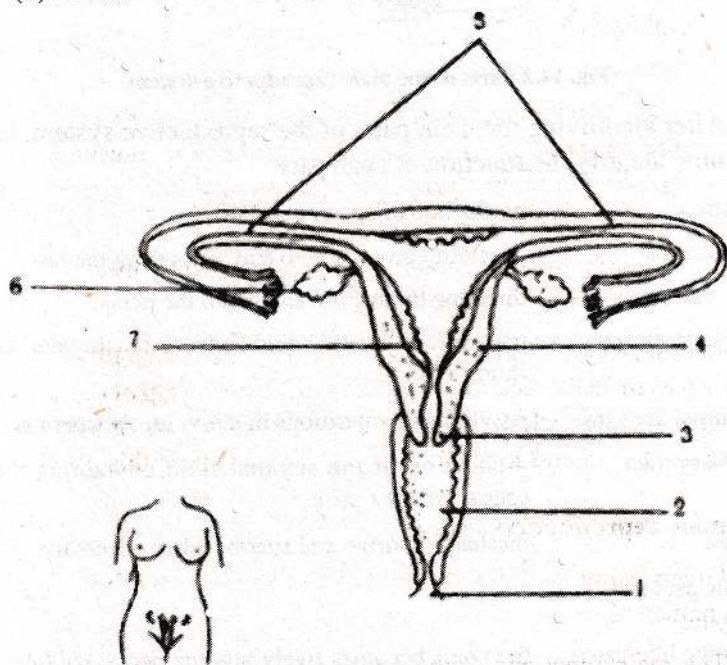


Fig. 14.1 – Parts of the female reproductive system

- | | |
|---------------------|-------------------------|
| (1) testis | (6) urinary tract |
| (2) testis sac | (7) penis |
| (3) vas deferens | (8) glans penis |
| (4) prostate gland | (9) prepuce |
| (5) seminal vesicle | (10) sponge like tissue |

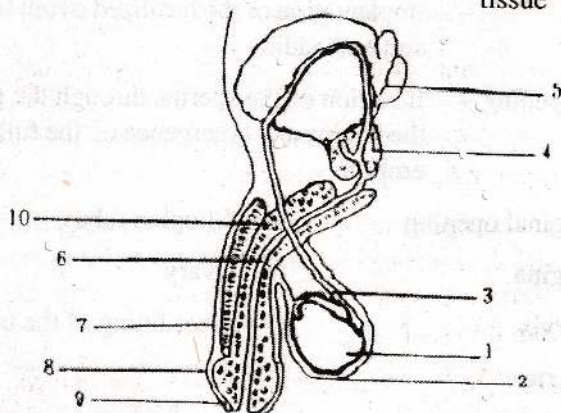


Fig. 14.2 Parts of the male reproductive system

After identifying the main parts of the reproductive system, let us now identify the function of each part

- | | |
|--------------------|--|
| Testis | – production of sperms and storage. |
| Testis sacs | – providing protection to and supporting the testis. |
| Vas deferens | – directing the mature sperms to the penis. |
| Prostate glands | – production of some liquid contained in the seminal fluid. |
| Seminal vesicles | – providing the nutritious medium for the sperms. |
| Urinary tract | – production of the seminal fluid containing the sperms and the urine. |
| Penis | – discharging urine and sperms when necessary. |
| glans penis | |
| prepuce | |
| Sponge like tissue | – the penis becomes lively and the necessary lubricants are produced. |

Menstruation

The preparation of the body of a girl for the reproductive function is known as puberty or attainment of age. The menstrual cycle that starts from the day of menstruation continues till about 50 years in the case of a woman and takes place in the form of a cycle once a month. However the age limit given here shows changes depending on the individual. The age at which menstruation starts, the duration of the menstrual cycle, the number of days menstruation lasts, etc. differ greatly from individual to individual. One should not fear if such changes occur.

From then onwards the process of menstruation that takes place once in 24-31 days if a normal thing. Between two menstruations, that is 11-17 days before the next menstruation a mature ovum is released from the ovary.

Example: If the menstrual cycle of a person is 28 days, an ovum is released during the period of 13-14 days from the first day of menstruation.

The mature ovum thus released from the ovary passes through the fallopian tube towards the uterus. If it meets a sperm in the first part of the tube, it is fertilized resulting in a foetus. If fertilization does not take place the surface region of the uterine wall breaks off and is released with a certain amount of blood. This release of blood may take place for 3-5 days.

This process known as menstruation may some times cause some discomfort to the person concerned. Even though various myths prevail in this regard, it should be remembered that it is a very natural and normal phenomenon. Specially, it is not necessary to make any change in your behavioural pattern but it is important that you pay special concern, with regard to your cleanliness.

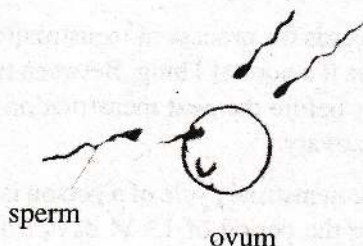
The ovum that is released stays alive only for a short period of about 24 hours. If during this time it meets a sperm, it fertilizes forming a foetus. Thereforth the foetus fixes to the wall of the uterus and starts growth. The nutrition and other needs and also the protection it requires is supplied by the placenta that is fixed to the

wall of the uterus. During the period in which an embryo develops in the uterus, the menstrual cycle stops temporarily. The embryo remains in the uterus for a period of 280 days. Finally it leaves the mothers body. This is known as 'birth'.

If the ova are fertilized

If the released ovum is fertilized, certain stages of the changes that take place from the time of conceiving to the time of birth are indicated in the diagram below.

Fertilization of the ovum



All these changes taking place in the reproductive system according to a specific pattern, are controlled by hormones. Sometimes there may be instances where complications arise due to deficiencies or abnormalities in the required hormones. Often, during the early stage of a foetus, that is during the first three months and specially during the latter half of this period, there is a threat of an immature foetus to abort.

Such complications may be avoided by controlling the hormone level by artificial means even. Abortions may take place due to other reasons too.

- * Formation of a defective embryo due to weak or deceased sperms or ova.
- * Due to the uterine wall becoming weak or due to uterine tumors.
- * Mother becoming physically fatigued excessively.
- * Mother suffering from socially transmitted diseases.

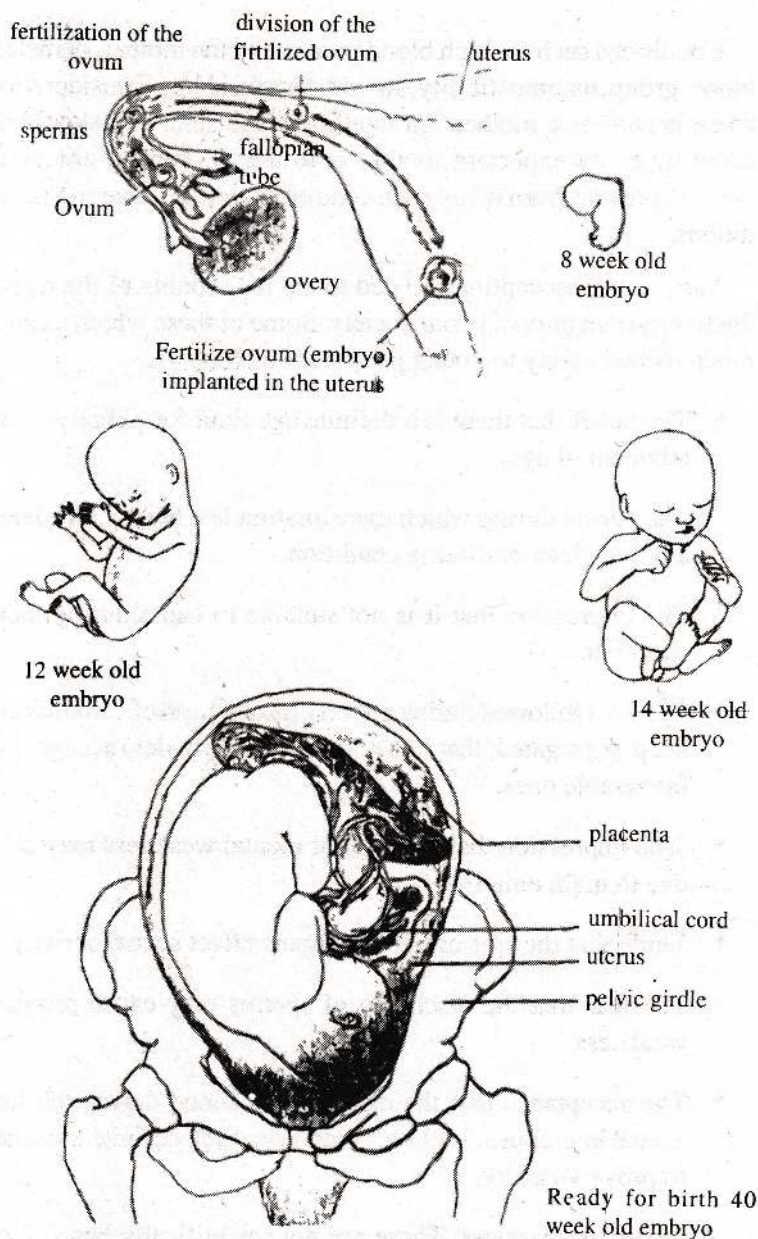


Fig. 14.3 From conception to birth

Conditions such as, high blood pressure in the mother, diabetes, blood group incompatibility should be taken into consideration when becoming a mother. An intelligent decision, that should be taken by every expectant mother is to attend medical clinics in order to prevent from many such conditions or minimize such conditions.

Various misconceptions related to the functioning of the reproductive system prevail in our society. Some of these which cause much mental agony to young people are as follows.

- * The belief that there is a definite age limit for puberty or attainment of age.
- * The period during which menstruation last being considered as an unclean or disease condition.
- * The impression that it is not suitable to bathe during menstruation.
- * Customs followed during puberty (prohibition of certain food, keep segregated, that it is not good to see males) accepted as favourable ones.
- * The impression that physical or mental weakness may arise due to night emission
- * Think that the size of the sex organs effect sexual activity.
- * The fear that the discharge of sperms may cause physical weakness.
- * The acceptance that the discharge of blood during the first sexual intercourse is clear, compulsory and definite evidence to prove virginity.

All these are baseless. These are not scientifically based facts but have resulted from various beliefs and sometimes from false news items given in newspapers and other sources.

Infertility

Some married people become highly frustrated mentally due to not having children. The woman who does not bear children is looked down upon in society as a "sterile woman". Being childless is not a rare thing. In our country about 15% of married couples are in this state. In countries like America it has been revealed through experiments that 40% are childless. It is an established fact that the causes or drawbacks effecting sterility is almost equal among men and women. The reasons for sterility are varied. These may be physical, physiological or environmental.

Eg.

- * Sperms or ova not being produced.
- * The sperms or ova formed not being healthy/less viable.
- * Narrowing of fallopian tubes such that fertilization is hindered.
- * Certain tumours forming in the uterine wall.
- * No suitable environment for fertilization/high acidity.
- * The required hormone content being less or their activity being reduced.
- * Mental tension
- * Smoking and use of drugs.

From recent times, environmental factors prevailing in highly developed countries eg. It has been found that radiations too influence this.

How does the embryo develop?

It is understood that once an ovum is fertilized it grows continually and turns into an embryo. What are the changes that take place in the ovum that undergoes fertilization in the first 1/3 region of the fallopian tube?

This is now a small single cell known as the, zygote this single cell becomes implanted in the wall of the uterus.

The small group of cells formed by the division of this single cell, becomes a small embryo. The embryonic membranes (placenta) situated close to the embryo and which provides nutrition to it, too are formed from these cells. We will now see how this embryo develops.

- 2 – 6 Weeks – A foetus with a human form, having a length of about 3cm. The nervous system, eyes, ears, nostrils, liver and kidneys start differentiating and the heart is beating.
- 12 – 24 weeks – The organs have clearly differentiated into systems.
- 20 weeks – The mother feels the foetal movements well. About 12cm. long. About 11/2 pounds in weight.
- 28 weeks – About 21/2 pounds in weight, Since the systems are well developed and if gives birth to during this period could be saved.
- 36 Weeks – The embryo is “plump” due to deposition of fat.

The age of the foetus is counted from the first day of the last menstruation. The embryo gives birth in about 280 days from this date.

When the embryo is fully grown, the baby is discharged to the outside by the special contractions of the muscles of the uterus (labour pains). This is indeed very normal and at the same time a unique and fascinating phenomenon.

However at certain times various complications may arise. Hence it is important that an expectant mother should attend clinics regularly and seek medical advice when necessary.

The following are some functions carried out in the clinics

- * Testing of blood – By this means certain weaknesses and illnesses can be identified.

- * Measurement of blood pressure, detecting urine infections etc.
- * Examination of the heart and other organs.
- * Being observant about the position of the baby, increase in weight etc.
- * Immunization against tetanus.

All these help to ensure the safety of the mother, the development of the child and a trouble free child birth. In addition to attending clinics the services and advice offered by health nurses and family health nurses too will be useful.

Diseases related to the reproductive system.

There are certain diseases related to the male and female reproductive system. Being aware of certain facts regarding these diseases will be important to you when facing the future. Hence let us consider some basic facts about these. Since many of these diseases may be infected from one person to another through sexual relationship they are known as sexually transmitted diseases (STD). These diseases may be infected by other means too. For example, through the blood of an infected person, from an infected mother to the child. These disease symptoms, are mostly evident in the sex organs. Hence one cannot identify from outside whether a person has such a disease.

A brief description of the disease symptoms and other details of gonorrhea and syphilis which are two of the main diseases among the sexually transmitted diseases seen in Sri Lanka is given below.

Disease	Symptoms of disease	Mode of infection	Disease causing agent
1. Gonorrhea	Burning sensation when urinating, pain, discharge from sex organs or genitalia	From sexual relationship with a patient	Species of bacteria
2. Syphilis	Blisters rash wound occurring in the genitalia	From sexual relationship with a patient	species of bacteria

In addition to these two diseases, a number of other diseases too occur as a result of sexual contact with a diseased person.

- * Sexual herpes

- * Sexual warts

- * HIV / AIDS

Sexual herpes and sexual warts cannot be completely cured. Socio-economic reasons too influence the spread of sexually transmitted diseases. Example Prostitution, use of drugs, homo sexual relationships, insecurity prevailing among young women and among youngsters relaxed family relationships social acceptance, increase of sexual relationships etc. Open discussions, finding solutions after discussion with knowledgeable people, and finally taking favourable decisions about ones behavioural patterns is an extremely important and timely necessity.

When talking about sexually transmitted diseases, a very special mention has to be made about HIV/AIDS which is a disease to which serious attention has been drawn during recent times.

HIV/AIDS

AIDS is a deadly disease condition that has been discovered in America in 1981. It is caused by a virus (HIV virus) and is spread mainly through sexual relationship. There are other modes of infection too.

Eg.:- Through infected blood

From and infected mother to the embryo

The immunity systems in our body is destroyed by this virus. When this happens the individual can contract any disease easily (example: Influenza, pneumonia, diarrhoea tuberculosis) finally resulting in death.

During the early stages infected individuals cannot be identified from outside. The disease could be identified only by a blood test. A person infected with the virus shows disease symptoms only

after about 80% of the immunity system has been destroyed. However he or she can be a person who infects another individual.

As an adolescent it is important for you to be aware of the actions that should be taken to prevent from this disease.

- * Building up a friendly inter relationship among those of the opposite sex.
- * Avoid having sexual relationship until marriage.
- * Building up a successful marriage and family life.
- * The use of sterilized needles and equipment when receiving injections. It is also important to be aware of the ways by which aids is not contacted. This is because the number of myths on this subject is so great in the society.

Ways by which HIV/AIDS is not spread.

- * Shaking hands
- * Living with an AIDS patient in the same house
- * Taking food
- * Kissing and hugging
- * Use of pillows, mattresses, towels and clothes used by the patient.
- * Using the same toilet
- * From the bite of insects (e.g. Mosquitoes)
- * By looking after an aids patient
- * From a patents cups, plates and spoons
- * By donating blood
- * From cough and sneezing

After acquiring knowledge about the manner in which AIDS is spread and not spread, it is reasonable for you to develop a fear for this disease and also make an effort to safeguard from this disease.

However there is no reason to develop a fear about an AIDS patient or to keep away from an AIDS patient. You are only a threat to him and there is no threat at all from him to you. Cornering such people from the society and blaming them is not suitable to people like us living in a civilized society. Extending our love, kindness and corporation to them so that they could lead the rest of their lives free of sorrow is an obligation by us and also it will be of some help to eradicate the disease AIDS from the world some day.

15. Preparation for Life

In the preceding chapter we discussed how your reproductive system is uniquely designed to produce young or members of a second generation in order to continuously maintain our kind or mankind. During the embryonic stage while being placed very securely within the mothers body, the embryo is nourished and grows without any harm and comes out to the world as a completely grown child.

For everything to take place naturally and well, socially too, certain adjustments are necessary. The grouping of people as families and the family unit functioning on a legal foundation known as marriage and so on could be considered as such social adjustments. What is most established through this social organisation known as marriage is the physical, mental and social wellbeing and the emotional development and stability of the members of the next generation. We will discuss further about each of these.

Is marriage necessary?

Can you recollect the customs and traditions followed in a wedding you participated recently? You may have realized that most of the activities that were carried out then were those relevant to the particular cultures and also legal obligations. These traditions have some importance both culturally and legally. We may summarise them as follows.

Legal Importance: Receiving the ownership of property
 Responsibility
 Receiving legal protection.

When a couple is not married, after the death of one member various problems arise with respect to the ownership of property and protection. To avoid such problems it is important that marriage

takes place legally. There is no doubt that even children resulting from such a marriage will be of a very insecure status socially, economically and mentally.

Cultural Importance

- * Welcoming the new couple in the presence of the relatives.
- * Understanding the gravity and responsibility of the status received.
- * The blessings of others in the society and receiving some guidance from them.

No matter to which level marriage customs are carried out, it can be accepted that the 'incident' known as marriage fulfils an important task in the social wellbeing.

There is a series of laws to be followed when performing a marriage and also a series of laws to be followed when cancelling a marriage. Violating these rules is an offence that can punish you by law.

Family

The next step of a married couple is to build up a family. A married couple after getting children become mother and father. The mother father and children together form the family. Such a family is known as a nuclear family. Sometimes relations who are close to the family too live with the members of the nuclear family forming an extended family.

Suppose the members of the family get together and prepare a home garden. How would this influence the children in the family. During such an instance, since all members of the family apply their labour on one activity there is a division of labour taking place. Hence a way has been paved for the welfare of the family, that is for the economy and co-operation in the family. Also such peaceful harmonious and active families are an asset to the development of the country. Think of as to what a resource such families are to the village.

What is the function carried out by a family in the spiritual aspect? When individuals meet together as a family, isolation and selfishness could be prevented.



Fig. 15.1 Love and affection within the family

One's family can be considered as an institution through which the love, affection and closeness existing among the mother, father and children are expressed and by doing so, the sorrow, pain, needs and wants of the children could be expressed, and these could be listened to and understood too. It should be a place where one could let out one's feelings and emotions as for example, "mother I feel sad today." "I have a stomach ache" and so on. Similarly your mother and father should be able to express their difficulties. Things such as, "I have a headache, I am unable to prepare food today" Also it gives an opportunity and consent to the wife and husband to express their sexuality in a very modest manner. Also, the family ensures a control over the sexual relationships in the society. By this means, trouble free social relationships will be setup in the society.

What is the social role fulfilled by a family.

It is a normal custom of the family to be associated with various social activities. Parents and children in the family going about together, participation in social functions such as weddings, going on pilgrimages and pleasure trips are among these. The development of socio - friendly attitudes such as recognition of moral principles and behaviour in conformity with the society takes place at the beginning.

Development of peaceful thoughts,

Inclined to be active in society.

Behaviour, selection and guidance.

Conservation of family health and environmental health.

Protection of cultural heritage and cultural values.

Living in conformity with the society.

Conservation of values.

Not being antisocial.

What is the educational role of the family?

What is meant by the saying that, " parents are the first teachers of the child."? It is from your home that you first received the education for life. It is from the home that you first learn everything from the way you eat and drink to the way you move with the society. The foundation for a particular profession is laid in the home. It is from the home that our ancestors received some education for very important professions such as farming, carpentry and native medicine. The knowledge possessed by our ancestors thus came down from generation to generation. Find out the influence this had on the children.

- * Identifying learning situations about the society.
- * Personality development
- * Spending the leisure time meaningfully.

- * Development of skills.
- * Spiritual development.
- * Continuing the knowledge possessed by the ancestors, from generation to generation.
- * Identifying one's role.

Mentioned above is the role possessed by a family when it is considered as a unit. However the responsibility of carrying out this role should be divided among its members. However, within a house, sometimes when considering the different duties in the house, there may be a greater tendency to entrust a particular responsibility on a family member. However he or she may require the support of the others to fulfil the task successfully.

Example.

Earning money is mostly the fathers responsibility. However making use of this money frugally is the responsibility of the others.

Preparation of food is the mothers responsibility - However the support of the others is necessary for the rest of the work.

You may now realize that a favourable relationship should exist among the members of a family in order to hold these responsibilities. These may be listed as follows.

Physical relationships

- Helping one another
- Obeying one another
- Sharing

Mental relationships

- Protection from external pressures
- Helping to get over frustrations
- Helping to solve problems
- Acceptance / appreciation
- Expressing emotions / listening
- Understanding

If the love and affection we receive from the family are "unconditional" the children emerging from such a family will turnout to be totally developed individuals who are of a great asset to the society.

On the other hand when relationships are broken down, in place of normal behaviour, children may show a tendency towards various deviations in the behaviour.

Examples:

- Addiction to drugs
- Indulging in vices
- Sexual deviation
- Anti - social activities
- Violent actions

Do you agree with the fact that strengthening of the family unit more and more, is one clear and definite mode of eradicating these vices from the society?

Health & Physical Education - Glossary
Grade - 9
Chapter 1 - Health and Wellbeing

Active Almighty	கிருஷ்ண, கவி கர்வகோர்	தன்வினை எல்லாம் வல்ல, சர்வல்லமை
Collectiveness Contentment Coronary diseases	கூலகித வகி காசகித வ கிரகித வகி ரோக	கூட்டு மொத்தம் திருப்தி இதயமுடியிடநோய்
Dearth of human resource Deterioration of health	கூல கிதவகி கிதவகி கூலகித கிதவகி	மனிதவள தட்டுப்பாடு உடல் நலம் குன்றுதல்
Effectively	கூலகித	பயனளிக்க கூடிய வகையில்
Effectiveness Efficiency	கூலகித கூலகிதவகி	பயனுள்ள வினைத்திறன்
Fascinating Favourable behavioural patterns Flexibility	கூலகித கூலகித வகி கூலகித வகி	கவர்ச்சியாக சாதகமான நடத்தைக் கோலங்கள் நெகிழுந் தன்மை
Healthy Healthy individual High blood pressure	கூலகித கூலகிதவகி கூலகித வகி	உடல் நலமிக்க உடனலமிக்க மனிதர் உயர் குருதி அழுக்கம்
Injurious habits	கூலகித	தீங்கு பயக்கும் பழக்கங்கள்
Life span Life style	கூலகித கூலகித வகி	ஆயுட் காலம் வாழ்க்கைக் கோலம், வாழ்க்கை பாங்கு
Mental wellbeing	கூலகித	உள நலம்
Noblest gains Noblest wealth	கூலகித கூலகித வகி	சிறப்பு வாய்ந்த நயம் சிறப்பு வாய்ந்த செல்வம்
Perfection	கூலகித	பரிபூர்ணம் / முழுநிறைவு

Physical fitness Physical wellbeing	உயிர்நிலை உயர்வு நாடிநிலை உயர்வு	உடற்கூறு உடல்நலம்
Social wellbeing Supreme	சமூக நலம் உயர்ந்த	சமூக நலம் உன்னத
Work force	உழைப்பு வலிமை	தொழிலாளர் அணி

Chapter 2 - Health Promotion

Beneficial environment	நன்மையான சூழல்	பயனுள்ள சூழல் / நற்கூழல்
Health promotion Health services	சுகாதார சேவைகள் சுகாதார சேவை	சுகாதார மேம்பாடு சுகாதார சேவை
Methodology	முறைப்பாடு	முறையியல்
Public policies	மக்கள் கொள்கைகள்	மக்கள் கொள்கைகள்
Reorganization Risk	மீள்சீரமைப்பு அபாயம்	மீள் ஒழுங்கமைத்தல் ஆபத்து
Security	பாதுகாப்பு	பாதுகாப்பு

Chapter 3 - Our Heritage in Relation to Health

Anointing oil	செய்யுண்டி எண்ணெய்	எண்ணெய் தேய்த்தல்
Conservation Complex	சமர்ப்பணம் கூடு	காப்பு சிக்கல்கள்
Development	மேம்பாடு	அபிவிருத்தி
Envy	இருவருக்கும்	பொறாமை
Fulfilled life	பெரிந்த பரிசு	முழுநிறைவான வாழ்க்கை
Grannary of the east	பெரிந்த மனைவியை	கீழைத்தேய தானிய களஞ்சியம்
Ignorance	அறியாமை	அறியாமை
Live evidence Longevity	உயிர்நிலை நீண்டநாள் வாழ்வு	சுகாதார நற்காப்பு நீண்ட வாழ்க பல்லாண்டு வாழ்க

Lust	ரூப	சிறுநின்ப வேட்கை
Marvels	விக்கதி	ஆக்கங்கள்
Middle path	மத்தி பிழை	மத்தியஸ்த போக்கு
Miracles	வாக்கதி	அற்புதம்
Overcoming the senses	ஒன்றிய புகி	புலன் அங்கங்களை மேலாலுதல்/வெல்லுதல்
Parathyroid gland	பார்தைராய்டி ஓட்டிய	
Pituitary gland	பிபிதுட்டி ஓட்டிய	புடைகேடயச் சுரப்பி
Prosperity	புரோஸ்பெரிட்டி	கபச்சுரப்பி
Puberty	புபர்டி	வெற்றிப் பொழிவு/ நற்பேறு /செழுமை
Rites and Rituals	ரிடீஸ் ரிசுட்டீஸ்	சடங்குகளும் ார்புகளும்
Spiritual wellbeing	ஸ்பிரிதுவல் ஹெல்வெல்	ஆன்மீக நலம்
Suitability unsuitability	சூயிடபிலிட்டி சூயிடபிலிட்டி	பொருத்தங்களும் பொருத்தமின்மையும்
Talents	தாலண்ட்	திறமை
Thyroxin	திராக்சின	கெட்டித்தனம் தெரெக்ஸின்

Chapter 4 - Make Life Meaningful

Self esteem	ஸெல் ஃஸ்டீம்	தன்முனைப்பு தற் பெருமை
Self image	ஸெல் இமேஜ்	பிரதி விம்பம்

Chapter 5 - Our Fascinating Body

Adrenaline	அட்ரலின	அதிரீனலின்
Adrenal gland	அட்ரலின ஓட்டிய	அதிரீனற் சுரப்பி
Anger	அங்கர்	குரோதம்
Antibodies	அன்டிபாடீஸ்	பிறப்பொருளெதிரிகள்
Combustion	கம்பஸ்டியன்	எரிதல்
Comfort and sorrow	கமபர்ட் அன்ட் சாரோ	இன்பமும் துன்பமும்
Constant range	கான்ஸ்டன்ட் ரேன்ஜ்	மறநிலை
Dehydration	டீஹைட்ரேஷன்	நீரகற்றல்
Diabetes	டீயாபீட்டீஸ்	நீரிழிவு நோய்
Disease producing agent	டீஸீஸ் ப்ரொட்யூசிங் அஜன்ட்	நோய்க் காரணிகள்

Endocrine gland	கிர்ணை நுனி	அகச் சுரப்பி
Envy	வேரடி	பொறாமை
Fatal	மரணகிண	சாவுக்குரிய
Fluid	நீர்ம	விதிவசமான பாய்மம்
Gains and losses	புறம் இடம்	நயங்களும் நட்டங்களும்
Gene	புணர்	பரம்பரையலகு
Glucogen	சர்க்கரை	குளுகோசன்
Glycogen	சர்க்கரை	கிளைக்கோசன்
Goitre	அருகிண	கண்டமாலை
Growth hormone	வளர்ச்சி ஹார்மோன்	வளர்ச்சி ஓமோன்
Homeostasis	ஹோமோஸ்டாசிஸ்	ஒருசீர்திடநிலை
Human Immunodeficiency		
Virus	பி. ஏ. டி. பி	எச். ஐ. வீ. வைரஸ்
Immune system	பரிசுத்தி பற்றிண	நிர்ப்பீடனத் தொகுதி
Immunity	பரிசுத்திண	நிர்ப்பீடனம்
Infection	பாண்புண	தொற்றல்கள்
Insulin	இன்சுலின்	இன்சுலின்
Jealousy	பொறாமை	பொறாமை
Keratin	கெரட்டின்	கெரட்டின்
Langerhan bodies	லாங்கர்ஹான் பிண	இலங்கான்சு சிறு தீவுகள்
Lymph tissue	லிம்பு பிண	நிணர் இழைமம்
Mono cytes	மோனோசைட்டு	ஒரு குழியங்கள்
Mental stress	மனசை பிண்புண	உளத்தகைப்பு
Ovary	ஓவரிண	சூலகம்
Oestrogen	ஓஸ்டிரோஜன்	ஈஸ்ட்ரோஜின்
Pancreas	பாண்டிரீசு	சதை
Pigment	பிண்டம்	நிறப்பொருள்
Sensitive	சென்சிடிவ்	உணர்ச்சியுள்ள

Stimulating hormones	உற்சேகக ஹார்மோன்கள்	தூண்டும் ஹார்மோன்கள்
Temperature range	உஷ்ணத்திற் பரம்பல்	வெப்பநிலை வீச்சு
Testosterone	டெஸ்டோஸ்டேரோன்	தெசுத்தோதீரோன்
Ultra violet rays	பாரசுவித்திர கதிர்கள்	கழியுதாக்க கதிர்கள்
Vaginal secretions	வயிதி ஸரவ	யோனிச் சுரப்புகள்
White blood corpuscles	வெள்ள ரத்தக் குழிகள்	வெண்குருதிச் சிறுதுணிக்கைகள்

Chapter 6 - Growth Changes in the Body

Affection	அனேகநிலை	விருப்பம்
Birth weight	உபதன் ஓர்	பிறப்பு நிறை
Bone	எலும்பு	எலும்பு
Bone fractures	எலும்பு கறுத்தல்	எலும்பு முறிவுகள்
Calcification	கல்கிபிகரிதல்	சுண்ணாம்பு படிவு
Cartilage	கார்டிலேஜ்	கசியிழையம்
Development	உருவாதல்	அபிவிருத்தி
Ejaculation	உருவி லேர்வதல்	வீசல்
Growth	உருவாதல்	வளர்ச்சி
Growth hormone	உருவாதல் ஹார்மோன்கள்	ஓமோன் வளர்ச்சி
Growth spurt	உருவாதல் வளர்ச்சி	வளர்ச்சி ஏற்றம்
Joint ache	கூர்வதல் உருவாதல்	முட்டுவாதம்
Life expectation	உயிர்வாழ்வு எதிர்பார்ப்பு	ஆயுள் எதிர்பார்ப்பு
Love	அன்பு	அன்பு / காதல்
Mathematical ability	கணித உருவாதல்	கணித ஆற்றல்கள்
Maturity	உருவாதல் உருவாதல்	முதிர்ச்சி
Myth	உருவாதல் உருவாதல்	அதித கற்பனை
Peer group	கூர்வதல் உருவாதல்	சமவயதுக் குழுக்கள்
Physical development	கூர்வதல் உருவாதல்	உடல் விருத்தி
Problem solving logical ability	உருவாதல் உருவாதல்	பிரச்சனை தீர்க்கும் தர்க்க ஆற்றல்கள்

Psycho social development	மனச் சமூகவியல் வளர்ச்சி	உளச் சமூகவியல்
Reflex action	பிரதிவினை	தெறிவினை
Replacement	பதிலிடல்	பதிலீடு
Rib cage	குள அம்பு	விலாபெண்டிக் கூடு
Secondary sexual characters	தேநிலை இயல்பு	துணைப்பாலியல்புகள்
Serise	செரிசை	புலன்
Sex hormone	இயல்பு ஹார்மோனஸ்	பாலியல் ஹார்மோன்கள்
Sexual feeling	இயல்பு உணர்வு	பாலியல் உணர்ச்சிகள்
Transparency	பொருத்தமடைதல்	ஊடுக்காட்டும் இயல்பு

Chapter 7 - Fulfilling Nutritional Requirements

Acute mal - nutrition (Wasting)	நிழல் மனச்செறிவின் (வளர்ச்சி) மிகுந்த போசணைக் குறைப்பாடு (தேய்வு)	
Agility	செறிவின்	சுறுசுறுப்பான
Apetite	உணர்வு	வேட்கை
Basal Metabolic Rate; (BMR)	அடிப்படை உயிர்வாழ்வு வீதம்	இருவண்ணுச்சேப வீதம்
Body building exercises	உயிர்வாழ்வு பயிற்சிகள்	உடலை கட்டி யெழுப்பும் பயிற்சிகள்
Bone marrow	அம்பு மூலம்	என்புமச்சை
Colostrum	கொலோஸ்ட்ரம்	கடுப்புப்பால் சீம்பளஸ்
Constipation	மலச்சிக்கல்	மலச்சிக்கல்
Dwarfing	குறுகல் (நீர் வளர்ச்சி)	குறளான
Endurance	உயிர்வாழ்வு	பொறுமை/சகிப்புத் தன்மை
Fat soluble vitamin	தேய்வு உயிர்வாழ்வு	கொழுப்பில் கரையும்
Foetus development	உயிர் வளர்ச்சி	விற்றமிகள் முதிர்வுவாரு
Generation of energy	உயிர் உயிர்வாழ்வு	சக்தி பிறப்பாக்கம்
Hypertrophy	அம்பு உயிர்வாழ்வு	மீக்கையூட்டம்
Hypothalamus	உயிர்வாழ்வு	பரிவகக் கீழ்
Index	உயிர்வாழ்வு	கட்டி

Infant nutrition	வில்டு பேஷனா	குழந்தைகளுக்கான போசனை
Marginal nutrition	கிளி பேஷனா	எல்லைப் படுத்தப்பட்ட ஊட்டம்
Metabolism	பரிமாசனம்	அனுச்சேபம்
Non starch Polysaccharide	பிசி வைலிங் ஸ்டார்க் பாலிசாக்ரைடு	கொழுப்பற்ற பல் சக்கரேற்றுக்கள்
Nutrient matter	பேஷனா பதார்த்தம்	போசனைப் பதார்த்தம்
Placenta development	பிளாசென்டா வளர்ச்சி	குழி வித்தக விருத்தி
Physical fitness	பிசிகல் ஃபித்னஸ்	உடற்குதி
Recommended nutrients	பரிந்துரைக்கப்பட்ட பேஷனா	விதந்துரைக்கப்பட்ட போசனைகள்
Sex	பாலினம்	பால்
Stored nutrient	சேமிக்கப்பட்ட பேஷனா	சேமித்த போசனைகள்
Tendency	பிரசாரம்	நாட்டம்
Under nourishment	பெரிசேஷனா	குறையூட்டம் / குறைப் போசனைகள்

Chapter 8 - Challenges and Security (Safety)

Amoebic dysentery	அமீபா டிசென்டரி	அமீபா வயிற்றுழைவு
Antibiotic	அன்டிபையோட்டிக்	பிற பொருளெதிரி
Ash skin	அசுரோ	கட்டுமஷ்தான உடல்/ கட்டுக் கோப்பான உடல்
Blood / mucous diarrhoea	பிளட் / மூகஸ் டிரைஹோ	சீதம் கழிச்சல் நோய்
Candidiasis	காண்டிடாசிசிஸ்	கண்டிடா நோய்
Diarrhoea	டிரைஹோ	நீர்நிழி நோய்
Energetic	எனெர்கெட்டிக்	சுறுசுறுப்பான
Gonorrhoea	கோனோரோயா, டூட் லிண்ட்	கொனோரியா
Hydrophobia	ஹைட்ரோபியா	நீர் வெறுப்பு நோயுள்ள

Japanese encephalitis	ஜப்பானிய என்செபலிடிஸ்	யப்பான் மூளைக்காய்ச்சல்
Meningitis	மெனிங்கைடிடிஸ்	மூளையழற்சி
Purgative	புரேக்டிவ்	பேதி
Respiratory disease	ரீஸ்பிரட்டரி டீஸீஸ்	சுவாச நோய்கள்
Safe	சேஃப்	காப்பான
Sexual abuse	ஸெக்ஸுவல் அப்யூஸ்	பாலியல் துஷ்பிரயோகம்
Sexual harassment	ஸெக்ஸுவல் ஹார்ஸஸ்மென்ட்	பாலியல் துன்புறுத்தல்
Sexual herpes	ஸெக்ஸுவல் ஹெர்பீஸ்	பாலியல் ஹெர்பீஸ்
Sexual molestation	ஸெக்ஸுவல் மாலேஸ்டேஷன்	பாலியல் தொல்லை
Sexual wart	ஸெக்ஸுவல் வார்ட்	பாலியல் உண்ணி
Stimulating	ஸ்டிமூலேட்டிங்	தூண்டுகின்ற
Trichomonas	ட்ரிக்மொனாஸ்	ரிசியிக் கோமோனாசு நோய்
Typhoid	டீஃபாய்ட்	தைப் போயிட்
Urine infection	யூரின் இன்ஃபெக்ஷன்	சிறுநீர் தொற்றல்கள்

Chapter 9 - Rhythm

Balance	பாலன்ஸ்	சமநிலை
Time and rhyme	டைம் அன்ட் ரைம்	நேரமும் சந்தமும்

Chapter 10 - Posture

Correct posture	கரெக்ட் ஓரீஸ்தர்	சரியான கொண்ணிலை
Posture	புஸ்தர்	கொண்ணிலை

Chapter 11 - Physical Fitness

Aerobics	அரோபிக்ஸ்	சுவாசப் பயிற்சிகள்
Droop	ட்ரூப்	தொங்கி விழல்
Health related	ஹீல்த் ரிலேட்டட்	சுகாதாரத்துடன் தொடர்பானவை

Obesity	கொழுப்பு	கொழுப்பு
Partner activities	சகபாடிகளின் நடவடிக்கைகள்	சகபாடிகளின் நடவடிக்கைகள்
Performance related	திருன்கள் தொடர் பானவை	திருன்கள் தொடர் பானவை
Relaxation	கண்டிப்பு தளர்வு	கண்டிப்பு தளர்வு
Step	படிமுறை	படிமுறை
Warm up	உடலை ஆயத்தப்படுத்தல்	உடலை ஆயத்தப்படுத்தல்

Chapter 12 - Athletics and Sports

Aggressive	ஆக்கிரமிப்புக்குரிய	ஆக்கிரமிப்புக்குரிய
Air resistance	வளியினால் ஏற்படுத்தப்படும் தடை	வளியினால் ஏற்படுத்தப்படும் தடை
Approach run	அணுகல் ஓட்டம்	அணுகல் ஓட்டம்
Athletics	மெய்வல்லுநர் விளையாட்டுகள்	மெய்வல்லுநர் விளையாட்டுகள்
Batton change	குறுங்கோல் மாற்றம்	குறுங்கோல் மாற்றம்
Body building	உடற்கட்டுப் பயிற்சி	உடற்கட்டுப் பயிற்சி
Cross bar	குறுக்குக் கோல்	குறுக்குக் கோல்
Cross country	நாட்டுக்குக் குறுக்கான ஓட்டம்	நாட்டுக்குக் குறுக்கான ஓட்டம்
Crossing the horizontal bar	குறுக்கு கோலைத் தாண்டுதல்	குறுக்கு கோலைத் தாண்டுதல்
Delightful	மகிழ்ச்சி தரும்	மகிழ்ச்சி தரும்
Discuss throw	பரிதிவட்டம் எறிதல்	பரிதிவட்டம் எறிதல்
Distance of a pace	கவட்டிடைத் தூரம்	கவட்டிடைத் தூரம்
Eastern cut off	கீழைத்தேயப் பாய்ச்சல்	கீழைத்தேயப் பாய்ச்சல்
Elongated start	நீள் புறப்பாடு	நீள் புறப்பாடு
Empathy	மந்றொருவரின் ஆளுமையை ஆதர்சனமாக கொள்ளல்	மந்றொருவரின் ஆளுமையை ஆதர்சனமாக கொள்ளல்
Ethics	ஒழுக்கங்கள்	ஒழுக்கங்கள்
Exchange zone	பரிமாற்ற வலயம்	பரிமாற்ற வலயம்
Exemplary	உயர்வான	உயர்வான

Field event	பீர்டிஸ் ஒவ்வொரு	சுவட்டு நிகழ்ச்சி
Follow through posture	பலவான் ஒர்டிஸ்	எறிந்தபின் மெய்நிலை
Fosbury flop	நிலைப் புகை	புலொப் முறை
Front arc	ஒர்டிஸ் வாகை	பரிதிவட்டத்தின் முன்பகுதி
Get set	பென்	ஆயத்தஞ் செய்
Grip (Discus)	குறுகிய (நிலைப்பென்) பெனா (பெனா)	பரிதி வட்டத்தைப் பற்றல்
Hammer throw	பீர்டிஸ் பீசு கிரை	சமமட்டி யெறிதல்
Height of take off	கிளபெனா பீசு	உதைத்து புறப்படும் உயரம்
Hop step and jump	ஒன் பீசை	முப்பாய்ச்சல் - தத்தி மிதித்துப் பாய்தல்
Hurdles	கிளபெனா	தடை தாண்டல்
Initial readiness	பெனா பீசை	முன்னாயத்தம்
Inside change	பெனா பீசை	உட்புறமாக மாற்றல்
Inside surface	பெனா பீசை	உட்புற பரப்பு
Iron ring	கிளபெனா	இரும்பு வளையம்
Javelin throw	பெனா பீசை	ஈட்டி எறிதல்
Land	பெனா பீசை	நிலம்படல்
Lane	பெனா பீசை	ஒருவருக்காக பிரித் தொதுக்கப்பட்ட ஒட்டப்பாதை
Long distance	பெனா பீசை	நெடுந்தூர ஒட்டம்
Medium start	பெனா பீசை	மத்திய, குறுந்தூர ஒட்டம்
Middle distance	பெனா பீசை	மத்திய தூர ஒட்டம்
Mixed change	பெனா பீசை	கலப்பு மாற்றம்
Moral	பெனா பீசை	ஒழுக்கம்
Non visual change	பெனா பீசை	பார்க்காது மாற்றல் / புறத்தே மாற்றம் முறை
On your marks	பெனா பீசை	குறிப்பிற்குச் செல்(க)
Organised game	பெனா பீசை	ஒழுங்குபடுத்தப்பட்ட விளையாட்டுகள்
Outside change	பெனா பீசை	வெளிப்புற மாற்றல்

Perpendicular Perry 'O' Brian	உலேவன பெர்ரி ஓப்ரியன்	செங்குத்து பெரி-ஓ-பிரியன் முறை
Pole vault Power position	பிப் பாலி புல்கை ஓவ் வலி	கோலூன்றி பாய்தல் புறப்படும் கதி
Release	வெட வலி	விடுவிப்பு, கட்டுப்பாடு நீக்கம்
Rotating method Rotation	கரகவி டயட்ரிக் ருலிசே ஹென் (கலிபென்க ரிசென் டிரிசே) கலிபென்	சுழற்சி முறை சுழற்சி
Running Events	ரன் ஓவ்	ஓட்ட நிகழ்ச்சிகள்
Sail	சைல்	பறக்கை
Scissors	கஸ்சர் பிசர்	கத்தரிக்கோல்
Scrach line	ஸ்க்ரேச் லைன்	தொடுகோடு
Short distance	சுர்ட் டிஸ்டன்ஸ்	குறுந்தூரம்
Speed of pacing	ஸ்பீட் பைசிங் ஸ்பீட்	கவடு வைக்கும் கதி
Sports	ஸ்போர்ட்ஸ்	விளையாட்டுகள்
Start	ஸ்டார்ட்	ஆரம்பம்
Straddle	ஸ்ட்ரடில் ஹிப்	ஸ்சிறடல் முறை
Substitute	ஸப்சுடிடூட்	பதிலாளர்
Take off	டேக் ஓஃப்	புறப்படல்
Take off angle	டேக் ஓஃப் அங்கிள்	புறப்படும் கோணம்
Take off board	டேக் ஓஃப் போர்ட்	புறப்படு பலகை
Take off foot	டேக் ஓஃப் ஃபுட்	உதைத்துப் புறப்படல்
Technique	டெக்னிக்	நுட்பமுறை/முறைத் திறன்
Throw	த்ரோ	வீசுதல்
Track	டிராக்	சுவடு/ஓட்டப்பாதை
Under arm	அண்டர் அம்	கீழ்ப்புறக்கை
Upper arm	அபர் அம்	மேற்புறக்கை
Vaulting box	வால்டிங் பாக்ஸ்	ஊன்றுபெட்டி
Visual change	வியூவல் சேஞ்ச்	பார்த்தவாறு மாற்றல் முறை
Western roll	வெஸ்டர் ரில்	மேலைத்தேயப் பாய்ச்சல்

100-100000

194

Menstruation	மென்ட்ரேஷன்	மாதவிடாய்
Mid - adolescence	மிட் டைனெஸன்ஸ்	இடை கட்டிளமைப்பருவம்
Moth	மூலம்	புழுவின் ஆரம்பம்
Muscle	மஸ்கிள்	தசைகள்
Non - injudgemental	நான் டிஜட்மென்டல்	குற்றம் சுமத்தும் வகையில்
Optimistic	ஓப்டிமிஸ்டிக்	ஆரோக்கியமானவன்
Personal differences	பேர்சனல் டிபரன்ஸஸ்	தனியாள் வேறுபாடுகள்
Pessimistic	பேசிமிஸ்டிக்	தீமையே ஏற்படும் என எதிர்பார்க்கும் சபாவம்
		உடையவன்/ நம்பிக்கையில்லா குணமுடையவன் .
Pimple	பிம்பிள்	பருக்கள்
Polination	பாலினம்	பரவுதல்
Post - adolescence	பாஸ்ட் டைனெஸன்ஸ்	கடை கட்டிளமைப் பருவம்
Pre - adolescence	பிரே டைனெஸன்ஸ்	முன் கட்டிளமைப் பருவம்
Presence of mind	பிரேன்ஸ்	உளம் தளரா இயல்பு
Protecting the environment	பரோடெக்டிங் தி என்விரன்மென்ட்	சூழலை பாதுக்காத்தல்
Risky behaviour	ரீஸ்கி பிஹேவியர்	ஆபத்தான நடத்தைகள்
Self pity	செல்ப் பிடி	சுய அனுதாபம்
Sex organ	செக்ஸ் ஓர்கன்	பாலாறுப்புகள்
Short sighted decision	சுர்ட் சைடெட் டிசைஷன்	குறுகியகால தீர்மானம்
Shoulder	சூல்டர்	தோறப்பட்டை
Shramadana	சுரமடானா	சிரமதானம்
Signal	சிக்னல்	சைகை
Social cleansing	சோசல் கிளனிங்	சமூகச் சீர்திருத்தம்
Social Injustice	சோசல் இன்ஸ்டிசுட்ஸ்	சமூக அநீதி
Social welfare	சோசல் வெல்ஃர்	சமூக நலம்
Symbol	சைம்பல்	குறியீடு
Thigh	தைக்	முழங்கால்
Those of the opposite sex	தோஸ்ட் செக்ஸ்	வெறுப்புற்ற பாலியல்
Toxic drug	டாக்ஸிக் டிரக்	நச்சு தன்மை கொண்ட போதைப்பொருட்கள்

Vaginal secretion	வோனி ஸ்பெக்	யோணிக்கசிவு
Violence	விரோதம்	வன்முறை
Youth force	நுர்ப்பு வலுவை	இளைஞர் அணி

Chapter 14 - Sexuality and Reproduction

Acidity	அமிலமடைதல்	அமிலத்தன்மை
Acquired Immune Deficiency Syndrome (AIDS)	கேசி	ஏய்ட்ஸ்
Blister	வெடி	கொப்பளம்
Blood group	ரத்த குழுவை	குருதி இனம்
Caugh	காசம்	இருமல்
Cervix of uterus	வெடி வலுவை	கருப்பை கழுத்து
Conceive	பிழிவிட வலுவை	கர்ப்பமடைதல்
Copulation	கலப்புவை	புணர்ச்சி
Embryo	வலுவை	கரு
Fatigue	வெடி	களைப்பு
Fertilization	கலப்புவை	சங்கமம்
Foetus	பிழிவிட வலுவை	முதிர்முலவுரு
Gonorrhea	கூடி வலுவை, வோனோரிசை	கொனோரியா
Homosexuality	கலப்புவை	தன்னின பாலியல்
Human Immuno - Deficiency Virus (H.I.V)	மனித பிழிவிட வலுவை (கேசி. ஏ.டி. வி.)	சேர்க்கை
Implantation	அமிலமடைதல்	எச். ஐ. வீ. வைரஸ்
Infection	அமிலமடைதல்	பொருத்துதல்
Labour pain	வெடி வலுவை	தொற்றல்
Medical clinic	வெடி வலுவை	மகப்பேற்று நோ
Mental stress	மனித அமிலமடைதல்	மருத்துவ மனை
Mental tension	மனித அமிலமடைதல்	உளத்தகைப்பு
Parturition	(கலப்புவை) வெடி, பிழிவிட	மன அழுத்தம்
Pelvic girdle	கூடி வலுவை	பிள்ளைப் பேறு
Penis	கூடி வலுவை	இருப்பு வலுவை
Phalophian tube	கூடி வலுவை	ஆண்குறி
Placenta	கூடி வலுவை	பலோப்பியன் குழாய்,
Pregnant lady	கூடி வலுவை	கூலக்ககான்
		இளங்கொடி
		நச்சுக்கொடி
		கர்ப்பணிப் பெண்

Prostitution	மலிகா வளநில	விலைமாதர் / பாலியல் தொழிலாளர்கள்
Prostrate gland	தூக்கி ஓண்டி	ஆண்குறி முகை
Rash	படி	கொப்பளம்
Reproductive system	புருவை பட்டினி	இனப்பெருக்கத் தொகுதி
Role	தூக்கி	நடிப்பாங்கு
Seminal vesicle	தூக்கி	சுக்கில புடங்கள்
Sexually transmitting diseases (STD)	இனப்பெருக்கத் தொகுதி	பாலியல் மூலம் பரவும் நோய்கள்
Siphilis	புருவை, பட்டினி	சிவிலி சு
Smoking	தூக்கி	புகைத்தல்
Sneezing	தூக்கி	தும்மல்
Social disease	தூக்கி	சமூக நோய்கள்
Sterility	புருவை	மலடான
Sterilization	புருவை	கிருமியழிக்கப்பட்ட
Testis	புருவை	விதைப்பை
Umbilical cord	புருவை	கொப்பழம் நான்
Urethra	புருவை	சிறுநீர் தொற்று
Urine infection	புருவை	சிறுநீர்வழி
Uterus	புருவை	கருப்பை
Vas difference	புருவை	சுக்கிலக்கான்
Viability	புருவை	வாழ்தகவு
Virginity	புருவை	கன்னியல்பு
Zygote	புருவை	நுகம்

Chapter 15 - Preparation for Life

Antisocial	தூக்கி	சமூக விரோதி
Cultural heritage	தூக்கி	கலாசார பாரம்பரியங்கள்
Dispersed family	தூக்கி, தூக்கி	விரிவான குடும்பம் / கூட்டுக் குடும்பம்
Nuclear family	தூக்கி	கருக் குடும்பம்
Peaceful thought	தூக்கி	சமாதான சிந்தனை
Social ethics	தூக்கி	சமூக ஒழுக்கங்கள்
Stability	தூக்கி	உறுதிப்பாடு
Values	தூக்கி	விழுமியங்கள்
Young one	தூக்கி	பிள்ளை

