Appendices
APPENDIX I

PROFORMA

General information

Sr.no........................................
Date of Measurement......................
Name...........................................
Father’s subcaste..............................
Maternal’s subcaste............................
Date of Birth.................................
Decimal age..................................

Community: Jaunsari / Rajput

Father’s occupation: Government / Private / Business / Agriculture / Others.
Mother’s occupation: Government / Private/ Business / Agriculture / Housewife / Others.

For how long have you been a resident of Uttarakhand.
0-10 years/ 10-20 years/ 20-30 years/ >30 years.

Nutrition related information

Nutritional intake. Please specify your intake in the last three days under the following categories.

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<thead>
<tr>
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<th>Breakfast</th>
<th>Lunch</th>
<th>Dinner</th>
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<td>Days</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day 1</td>
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</table>
Please specify any special meals that you take in between the regular meals (Regular/Occasionally).

**Menstruation related information**

What was your age at menarche?

Duration of menstrual flow or menstruation in days, specify.

Blood flow during menstruation: Normal / Restricted / Heavy.

Colour of discharge (Blood): Red / Dark red / Other (specify).

Do you encounter any complications during menstrual period, if yes than which kind:

Muscular cramps / Stomach pain / Back pain / Legs pain / Depression / other (specify).

Do you visit doctor for menstrual related problem, if yes than specify.

Do you encounter any socio–cultural restrictions (taboos) during menstrual period (like restricted entry in temple, kitchens, other household work etc) if yes than mention.
**APPENDIX –I A**

**Anthropometric measurements**

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<tr>
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<td>S. height</td>
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<td>Waist Circumference (cm)</td>
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<td>Hip Circumference (cm)</td>
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<td>Calf Skin fold (mm)</td>
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<td>Sub scapular Skin fold (mm)</td>
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<td>Height Tibiale (cm)</td>
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<td>Height Spherion (cm)</td>
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<td>Height Iliospinale (cm)</td>
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<tr>
<td>Total Lower Extremity Length (cm)</td>
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<td>Thigh Length (cm)</td>
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<td>Lower leg length (cm)</td>
<td>LLL</td>
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APPENDIX -II

Anthropometric measurements

Direct measurements:

Body weight

**Definition:** It measures the total body mass with minimum possible clothing on the body, in kilograms using a weighing machine.

**Technique:** The body weight is the nude weight of body when the bowls are empty. The weight of all subjects was recorded in the mornings only. The subjects were weighed with standard weighing machine to the nearest of 0.5 kg without shoes. Since it was not possible to collect nude weight of body therefore a correction of 0.5 kg was made to deduct the weight of uniform. The return of the pointer to the zero mark was checked before and after weighing each subject.

Height or height vertex

**Definition:** It measures the projective distance from the standing surface to vertex in mid sagittal plane when the subject is standing in standard arm hanging position with the head oriented in eye-ear plane, using anthropometer rod.

**Technique:** The subjects should stand erect on a horizontal surface, and should stretch as much as possible, taking care that his heels are touching each other and the horizontal surface. Slight upward pressure is applied below the mastoid processes in order to help in stretching to the fullest. The head should be held so that his Frankfort plane becomes horizontal. Frankfort plane is that plane which touches the inferior most point on the infraorbital crest (lower border of the eye orbit) and the point situated in the ear notch above the tragus of the ear. The rod was held vertically and horizontal arm was brought down so that it touched the highest point on the head in the mid sagittal plane. The height is highly sensitive to fatigue and even upto 3 cms of diurnal differences have been recorded in it in the same subjects (Tanner, 1964). So it
is necessary to take all precautions in positioning the subject and preferably the measurement be taken in the morning to minimize the effect of fatigue.

**Sitting Height Vertex**

**Definition:** It measures the projective distance between vertex and the surface plane when the subject is sitting in standard sitting position with head oriented in eye-ear plane, using anthropometer rod.

**Technique:** The sitting height of a subject is measured while he/she sits on a stool or a table top. With the legs hang down freely, the back of the subject should be stretched as far as possible. The head is held so that so that Frankfort plane becomes horizontal and gentle upward pressure is applied to the mastoid processes. The muscles of the thigh and buttocks be contracted so that they may help in stretching the subject to the fullest. The horizontal bar of the anthropometer rod is brought down so that it touches the highest point on the head.

**Upper Arm Length**

**Definition:** It measures the direct distance between the acromion and radiale when arm is hanging downwards, using rod compass.

**Technique:** The arm should be hanging down normally, the palm of the hand directed towards the thigh. Mark the inferior border of the acromion process and the external superior border of the head of radius and measure the distance between them with the help of the anthropometer.

**Fore Arm Length**

**Definition:** It measures the direct distance between the radiale and stylion when arm is hanging downwards, using rod compass.

**Technique:** Mark the superior border of head of radius and the tip of the lateral styloid process on subject’s arm and measure the distance between them with the help of the anthropometer. The arm should be hanging down and the distance between these two points is measured.
Total Arm Length

**Definition:** It measures the direct distance between the acromion and dactylion III when arm is hanging downwards, using rod compass.

**Technique:** For this measurement subject’s arm should be hanging down by the side and fully stretched. With the help of anthropometer distance is measured between the inferior border of acromion process to the tip of the middle figure or the longest finger.

Hand Length

**Definition:** It measures the direct distance between the stylion and dactylion III when the hand is fully stretched, using a sliding caliper.

**Technique:** The hand is fully stretched and with the help of a sliding caliper direct distance is measured between the stylion and dactylion III.

Biacromial Breadth

**Definition:** It measures the transverse distance between right and left acromion points when the subject is standing in standard arm hanging position with both the shoulders at the same levels, using rod compass.

**Technique:** It is the maximum width of shoulders when the shoulders are relaxed and slumping forward. The subject should stand erect with the shoulders drooping a little forward. The measurements is taken between the outside edges of both the acromion processes, from the backside of the subject.

Bicristal Breadth

**Definition:** It measures the transverse distance between two iliocristale points when the subject is standing in standard arm hanging position, using rod compass.

**Technique:** It is the maximum width between the iliac crests of both sides. The subjects should stand erect and the investigator behind him. The bars of the anthropometer are applied to the iliac crests so that it can provide the maximum
width. The overlying soft tissue should be pressed hard in order to obtain the real measurements which represents the development of the bone.

**Mid Upper Arm Circumference**

**Definition:** It measures as horizontally at the mid way between the posterior angle of acromion process and elbow tip when the arm is hanging freely by the sides of the subject, using the steel tape.

**Technique:** It is the circumference of upper arm taken mid way while the arm is hanging down freely by the side. The midpoint of upper arm of the subject was marked between the inferior border of acromion process and the superior border of the head of radius. The measurements were taken at the marked level keeping the tape horizontal.

**Waist Circumference**

**Definition:** It measures as the maximum horizontal circumference of the waist at the level of naval (omphailion) with abdomen relaxed, using the steel tape.

**Technique:** Waist is the narrowest part of the torso. The subject was made to stand erect with abdomen relaxed and arms at the side and feet together. The investigator measured the waist circumference round the horizontal plane at the end of normal expiration.

**Hip Circumference**

**Definition:** It measures as the circumference of the hips at their widest portion, using steel tape.

**Technique:** For measuring hip measurement, the subject was asked to stand straight in relaxed condition with equal weight on both legs. The measurements was taken horizontally on the fullest part of hips without compressing skin.
Triceps Skinfold

**Definition:** It measures over the triceps muscle in the middle of the arm at the level of the upper arm circumference in line with the olecranon process, using skin fold caliper.

**Technique:** The triceps skinfold was measured over the Triceps muscles in the middle of the arm at the level of the upper arm circumference or the biceps skinfold, in line with olecranon process. The mid point of the upper arm was marked and skinfold was picked about one centimeter above the marked level.

Sub scapular Skinfold

**Definition:** It measures below the angle of scapula pointing downwards and outwards, using skin fold caliper.

**Technique:** The subscapular skinfold was measured below the angle of the scapula. The skinfold was picked up a little below the angle of the scapula pointing downwards and outwards.

Calf Skin fold

**Definition:** It measures at the level of maximum development of the calf muscle on the medial side (when the knee is flexed at right angle), using skin fold caliper.

**Technique:** It is measured at the level of maximum development of the calf muscle on the medial side. The skinfold was picked up medially and in line with the long axis of the leg and measured with skinfold caliper.

Height Iliospinale

**Definition:** It measures the projective distance from standing surface to iliopinale when the subject is standing in standard arm hanging position, using anthropometer rod.

**Technique:** This is the height of the iliac spine from the ground. The point is situated on the anterior superior iliac crest medially and is the most prominent. The subject
should stand erect and the body weight equally supported on both the feet. Mark the point and measure the distance from the ground keeping anthropometer rod vertical.

**Height Tibiale**

**Definition:** It measures the projective distance from the standing surface to tibiale when subject is standing in standard arm hanging position, using anthropometer rod.

**Technique:** It is the height of tibiale point from the ground. Tibiale is the upper point of the inner border of the medial condyle of the tibia. The subject should stand erect with feet a little apart and body weight equally distributed. Measure the distance of point tibiale from the ground, keeping the rod vertical.

**Height Sphyrion**

**Definition:** It measures the projective distance from the standing surface to sphyrion when subject is standing in standard arm hanging position, using rod compass.

**Technique:** This is a projective distance from the standing surface to sphyrion when subject is standing in standard arm hanging position with the help of rod compass.

**Foot Length**

**Definition:** It measure the straight distance between acropodion and pternion, using rod compass.

**Techniques:** The measurement is done by making the subject sit. Anthropometric or sliding caliper is placed along the axis of foot. Bring one arm of the instrument in contact with the centre of the heel, and the other with the longest toe. Care should be taken to touch the toe and not the nail.

**Indirect measurements:**

**Total Lower Extremity Length, Thigh Length and Lower Leg Length** are indirect measurements and Height Iliospinale, Height Tibiale and Height Sphyrion have been taken to calculate these measurements.
1. **Total Lower Extremity Length**

It is a projective measurement and is determined by subtracting K- quotient from the height iliospinale.

The values of ‘K’ are given for different values of height:

<table>
<thead>
<tr>
<th>Height</th>
<th>K- Quotient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 130 cm</td>
<td>1.5 cm</td>
</tr>
<tr>
<td>131-150 cm</td>
<td>2.0 cm</td>
</tr>
<tr>
<td>151-165 cm</td>
<td>3.0 cm</td>
</tr>
<tr>
<td>166-175 cm</td>
<td>4.0 cm</td>
</tr>
<tr>
<td>176 cm and above</td>
<td>5.0 cm</td>
</tr>
</tbody>
</table>

2. **Thigh Length**

It has been obtained indirectly by subtracting height tibiale from total lower extremity length.

3. **Lower Leg Length**

It has been obtained indirectly by subtracting height sphyrion from height tibiale.

All the circumferences and upper and lower extremity measurements were taken on the left side of the subject as per recommendations of I.B.P. (1969).
APPENDIX -III

List of Educational institutes covered under present study in district Dehradun, Uttarakhand.

2. Sapian Public School.
5. New field Public School.
6. Asha ram Vedic Senior Secondary School
8. Vidya Niketan
9. Childern Academy
10. Vikas Niketan
11. Asha ram Vedic Inter College
13. Guru Ram Rai Senior Public School
PUBLICATION (at the time of submission)