The purpose of the study was to examine the influence of regional diversity on physical fitness parameters and health awareness of students studying in the high schools of Karnataka state. The research scholar was depended on Kuvempu University Library resources, databases, internet, journals, etc. to review the literature pertinent to this investigation.

Gisladottir, Haga and Sigmundsson (2013) compared physical fitness in adolescents aged 15 to 16 years with high and low motor competence. From an initial sample of 94 adolescents, a group of 18 were identified as having high motor competence or low motor competence on the Movement Assessment Battery for Children-2. Eight adolescents (3 girls and 5 boys) comprised the low motor competence group, and 10 children (5 girls and 5 boys) made up the high motor competence group. To measure physical fitness, four tasks were used: one endurance test, one power test, one speed test (Test of Physical Fitness) and one flexibility test (EUROFIT). A one-way ANOVA revealed significant differences between the group with low motor competence and the high motor competence group in all tasks except the endurance task (Reduced
Cooper Test). The findings suggest that physical fitness components are negatively associated with low motor competence. However, no significant difference between the two groups in the Reduced Cooper Test might indicate that adolescents with low motor competence can enhance their cardiovascular fitness despite their poor motor coordination.

Cruz, et. al. (2011) examined the relationship between physical fitness, physical activity, and body mass index among adolescents who attended secondary school. A total of 131 healthy students (49 boys, 82 girls) age 14 to 18 years (M=16±1) participated in the study. Physical activity was assessed by a questionnaire based on the practice of organised and non-organised physical activity on a regular basis. Physical fitness level was determined by the Pacer test and allowed to label the individuals as ‘not fit’ or ‘fit’ according to the Fitnessgram. The individuals were also profiled according to their fat levels as ‘not fat’ or ‘fat’ also based on the Fitnessgram. Chi-square and t-test were performed to analyse the relationship between physical fitness, physical activity, and body mass index. Boys and girls were analysed separately. 66% of the boys and 38% of the girls were considered fit based on physical fitness test. Still the majority of students did not meet the recommended 1 h/day of moderate to vigorous physical activity. The average time spent doing physical activity was 2.9±2.2 h/day for the boys and 1.8±1.5 h/day for the girls. The
difference in physical activity participation levels was significant between boys and girls (p=0.005). Almost all students were considered fit based on body mass index (84% boys, 79% girls) and no differences were found between genders (p=0.531). Although the most active boys and girls performed better on physical fitness test, a relationship between physical fitness and physical activity was not found (boys p=0.069, girls p=0.079). For both genders, students with lower body mass index had better results on the PF test, however only for the boys the results were significant (p=0.009). Additionally, there was no relationship between the practice of physical activity and body mass index for boys (p=0.883) and girls (p=149). There are no relationships between physical fitness, physical activity and body mass index. The only exception was observed for the boys; those with lower body mass index had better results on the physical fitness test.

The relationship between physical activity and health-related physical fitness was evaluated in 282 Taiwanese adolescents 12-14 years of age by Huang and Malina (2002). The students were randomly selected from the 7th, 8th and 9th grades in two junior high schools in Taiwan. Physical activity was estimated as total daily energy expenditure and energy expenditure in moderate-to-vigorous physical activity from 24-hour activity records for three days, two week days and one weekend day. Health-related fitness was assessed
as the one-mile run (cardio-respiratory endurance), timed sit-ups (abdominal strength and endurance), sit-and-reach (lower back flexibility), and subcutaneous fatness (sum of the triceps, subscapular, suprailiac, and medial calf skinfolds). Physical activity is significantly and positively correlated with one-mile run performance and the sit-and-reach, but not with sit-ups and subcutaneous fatness. Overall, the strength of the relationships between estimated energy expenditure and specific fitness items in the total sample vary from low to moderate, with only 1% to 12% of the variance in fitness variables being explained by estimated energy expenditure. Comparisons of active versus inactive, and fit versus unfit adolescents provide additional insights. The more active (highest quartile) are also more fit in cardio-respiratory endurance and in the sit-and-reach than the less active (lowest quartile), and the more fit in the one-mile run (better time, lowest quartile) and the sit-and-reach (highest quartile) are more active than the less fit in each item, respectively.

Adolescent girls of age 13 to 19 years constitute nearly 66 million of population in India. The lives of these girls are characterized by limited education, lack of knowledge pertaining to social as well as health aspects and also limited influence on decisions affecting their lives. Thus, awareness is one major factor for development of this group of population because of the fact that these adolescent girls would be the future housewives. A study was
undertaken by Sharma, Nagar & Chopra (2009) to see the awareness of adolescent girls regarding health aspects through an intervention study. The study adopted a pretest – post test design with an intervention for a specific period. A total of 112 adolescent girls in the age group of 14 to 18 years were selected randomly from government schools of five villages in two blocks of Kangra district of Himachal Pradesh. The tools for assessment consisted of socio-economic status scale and a general awareness scale. The sample group was pretested on their level of general awareness which focused specifically on health aspects. An intervention package was developed on the aspects of health including general health, reproductive and child health, environmental health and nutritional aspects. The intervention was given for nine months to the girls through lectures, discussions and demonstrations. Post testing was done on the girls after the period of intervention. Results showed that the knowledge of girls regarding health aspects improved significantly after intervention. There was a considerable increase in the awareness levels of girls with regard to knowledge of health problems, environmental health, nutritional awareness and reproductive and child health. Thus informative and educable intervention seem to have a positive effect on awareness levels which would eventually encourage expansion of knowledge and positive health habits.
Adolescence is a period of biological, cognitive and social transition of such magnitude and rapidity that it is no surprise to find that it is associated with the onset or exacerbation of a number of health-related problems. It is the level of self-awareness among adolescents, which enables them to see where their thoughts and emotions take them. Jain, Kumar and Khanna (2013) assessed the extent of awareness regarding adolescent changes/problems among school going adolescents. It was a cross-sectional study and was carried out in Block Beri, District, Jhajjar (Haryana). A sample of 320 adolescent students of 9th-12th classes (80 from each school) were selected from four randomly chosen large Government senior secondary schools with strength of more than 250 students (two girls and two boys/co-ed senior secondary schools). Data were collected on predesigned, pre-tested and semi-structured schedules by conducting in-depth interviews of selected study adolescents by the investigator. Percentages, proportions, Chi-square test, Chi-square test with Yate’s correction and t-test. Out of 320, 212 (66.3%) study adolescents were aware of at least one adolescent change(s) whereas, when probed and further asked to enumerate the changes taking place in them, 272/320 (85%) adolescents could narrate at least one such change. Out of those 272, 24 (8.82%) (95% CI 6.0-12.79) adolescents either did not consider these changes as normal or they did not know whether the changes were normal or
abnormal. Adolescents greatly lack correct information related to their bodies' physiological, psychological and sexual changes. There is an urgent need for regular adolescent friendly information, education and communication activities covering different aspects of adolescent knowledge needs/problems.

Physical inactivity (PI) is found to be a major contributor to the high incidence of overweight and obesity among children and adolescents. As such, PI was significantly related to risk factors of cardiovascular disease. Studies especially in the 14-years in adolescents’ learners are sparse. Toriola and Monyeki(2012) determined the health-related physical fitness, body composition and physical activity status among adolescent learners. A total of 283 adolescents learners (111 boys and 172 girls) with mean age of 14.90±0.72 years from the Physical Activity and Health Longitudinal Study were participants in the study. Body composition according to the standard procedures of the International Society for the Advancement of Kinanthropometry, health-related physical fitness using the Eurofit protocol test and physical activity levels using the International Physical Activity Questionnaire were assessed and administered. Subsequently, total physical activity scores were calculated. The results show that on average, the boys (165.41±9.55cm) were significantly taller than the girls (157.88±6.94cm) (p<0.000). Girls had a slightly higher significant BMI (21.43±4.37 kg/m²) than
the boys (20.01±3.71kg/m²) (p=0.002). When the learners were categorised based on their BMI scores, the girls were more overweight (32.4%) compared to the boys (17.1%). Additionally, the girls (%body fat 26.01±8.51) were substantially (p<0.000) fatter than the boys (13.19±8.56). Furthermore, the results also indicated that the boys had consistently better performances in all the health-related physical fitness tests than the girls (p<0.000). More girls (19%) than boys (16%) watched TV for more than 3 hours daily. A total of 85 (30%), 78(27.5%) and 88(31.1%) of the adolescent students had low, moderate and high physical activity involvement. It was concluded that girls were more overweight and less active than boys. In view of the health implications of the findings, there is a need to create enabling environment and opportunities that will promote physically active lifestyle and develop life-long positive attitudes towards physical activity among the learners. Community-based strategies designed to facilitate effective and sustainable physical activity intervention programmes in schools are recommended.

Ortega, et. al. (2008) in a review summarized the latest developments with regard to physical fitness and several health outcomes in young people. The literature reviewed suggests that (1) cardio-respiratory fitness levels are associated with total and abdominal adiposity; (2) both cardio-respiratory and muscular fitness are shown to be associated with established and emerging
cardiovascular disease risk factors; (3) improvements in muscular fitness and speed/agility, rather than cardio-respiratory fitness, seem to have a positive effect on skeletal health; (4) both cardio-respiratory and muscular fitness enhancements are recommended in pediatric cancer patients/survivors in order to attenuate fatigue and improve their quality of life; and (5) improvements in cardio-respiratory fitness have positive effects on depression, anxiety, mood status and self-esteem, and seem also to be associated with a higher academic performance. In conclusion, health promotion policies and physical activity programs should be designed to improve cardio-respiratory fitness, but also two other physical fitness components such as muscular fitness and speed/agility. Schools may play an important role by identifying children with low physical fitness and by promoting positive health behaviors such as encouraging children to be active, with special emphasis on the intensity of the activity.

Inclusive growth policy is an attempt to bring the backward sectors, classes, castes, tribes, women, and marginal people into mainstream economy. It is necessary to understand the problem of exclusion to have better inclusive policy. Premakumara and Riyaz (2010) analyzed the regional disparities in educational development of Karnataka state as a backdrop to inclusive growth policy. It is revealed that out of four regions selected for study Gulbarga is the
backward region in field of education. In comparison to other regions, the literacy rate is quite low and drop-out rate is quite high. However, educational programmes introduced by the government have increased the enrolments in the region but students are not able to complete their education fully with high drop-out rate. It is suggested that immediate attention of government is required to handle the problem.

Adolescents have their specific problems and needs. A cross-sectional study was conducted by Vaibhavkumar, Ramanujand Balaamong 187 students of class X-XI. About 51 (43.2%) boys and 43 (62.3%) girls were aware about the components of the Female Reproductive System. Only 1 (0.8%) boy and 1 (1.4%) girl were aware about the components of the Male Reproductive System. Total 89.8% adolescents were aware that HIV/AIDS is a STD. Nearly 50% of the respondents thought that they were given adequate sex education. A total of 48.9% of the respondents were aware about the different forms of violence which included physical, mental and sexual abuse.

Education and prevention of type 2 diabetes in the adolescent population should be a high priority among school officials and healthcare providers. The purpose of the research study conducted by Curry (2009) was to educate adolescents on type 2 diabetes and to increase awareness of this disease. The
Health Promotion Model developed by Nola Pender was the theoretical framework used in this study. This model applies behavioral science’s understanding of learning to the area of health promotion. A time series design was an appropriate choice for this study and specifically, a one-group before-after design was used. The students were in seventh and eighth grade and enrolled in physical education classes at a local elementary school. There were 57 students recruited and 47 participants completed the study. The researcher used a diabetes educational program geared towards kindergarten through eighth grade. The students received a pre-test, watched an informational session and play on type 2 diabetes, and completed a post-test. The researcher graded each test according to a standardized answer sheet. All possible answers for the test were addressed during the lecture portion of the performance. The graded test scores were collected and placed on an Excel spreadsheet for data analysis. The main goal of this study was to address the research question “will educating seventh and eighth graders on type 2 diabetes increase their awareness of the disease?” This awareness can be demonstrated through an increase in the students’ test scores. An average pre-test score among the 47 students was 78%. After the informational session and play, the average post-test scores were 82%. This was a 6% increase from baseline testing. Although an encouraging statistic, this data was further explored. The type 2 diabetes
educational program used in this study was instrumental in its design and execution. The strength of peer education in this program cannot be understated. In this setting, students can make a difference in the lives of others. It is the hope of the researcher that further study into the effectiveness of this program can be pursued. The importance of this educational tool is far reaching and could be adopted into other school districts. It is through knowledge and understanding that we might influence our youth.

Although data analysis is both the culmination as well as the reward for one's labor in evaluating a health education program, to date there have been few standardized data analytic procedures for estimating the program's need or impact. Such procedures are necessary to make informed decisions about the relative merits of any health education program. Green & Lewis (1987) offered a systematic and integrated framework for calculating program need, reach, coverage, impact, efficacy, effectiveness, cost, efficiency, cost-effectiveness, benefits, cost-benefit, income, net gain or loss, start-up cost, operating cost, operating cost effectiveness and benefit. Data analysis from two different health education programs provide detailed examples of the calculations.

Rao, et. al. (2008) determined the effectiveness of an educational intervention program on knowledge of reproductive health among adolescent
This educational intervention study was carried out over a period of one year. A total of 791 rural girls in the age group 16-19 years were randomly selected from coastal villages in Udupi District, Karnataka state. Adolescent girls were educated regarding reproductive health and their awareness levels were evaluated immediately following intervention. Data was tabulated and analyzed using SPSS version 11.0 for Windows. Findings were described in terms of proportions and percentages. Chi square test was used to test the effect of the intervention. A significant increase in overall knowledge after the intervention (from 14.4 to 68%, P < 0.01) was observed regarding contraception. Knowledge regarding ovulation, first sign of pregnancy and fertilization improved by 37.2% (95% CI = (35.2, 39.2), P < 0.001). Knowledge regarding the importance of diet during pregnancy improved from 66 to 95% following the intervention. This study clearly showed that an educational intervention program can bring about a desirable change in knowledge among adolescent girls regarding reproductive health.

Venter (2008) constructed a questionnaire in the format of a test, to determine knowledge on dietary fat of higher-educated young adults. The topics on dietary fat included were in accordance with those tested in other studies. Forty multiple-choice items were drafted as questions and incomplete statements following the item construction rules. The items were reviewed by
nutrition and food science professionals for content- and face-related evidence (n = 4 respectively) and by students representing the study population for face-related evidence (n = 16) of validity. Twenty items were removed as the panel questioned their relevance and replaced with 17 items reviewed by them. The items now largely focused on food sources of fat. These 37 items formed the preliminary test that was administered to two groups of higher-education students expected to differ in nutrition knowledge level. The completed and scored items were statistically analysed to determine which items could be retained for the test. Items meeting the item analysis criteria formed the test. The Mann-hitney statistic was used to determine the construct-related evidence of validity and the Kuder-Richardson (K-R) 20 formula for the reliability of the test. Results: The 37-item preliminary test was completed by 99 and 87 students respectively forming the knowledgeable and less knowledgeable groups. Eighteen items remained after the statistical item analysis. Eight items did not meet the difficulty and discrimination index criteria respectively, nine the item-to-total correlation criteria and 13 the answer distribution criteria. The 18-item test was found to be reliable (K-R20 = 0.8997), as well as valid, since a significant difference (p < 0.001) in knowledge was found between the groups in the expected direction. The test can be used to compare the
knowledge scores of groups and of individuals as it met the reliability coefficient of 0.75 and 0.85 respectively to make such score decisions.

Hollander et. al. (2008) examined whether the “Short questionnaire to assess health-enhancing physical activity” and the “Injuries and Physical Activity in the Netherlands” questionnaire (“Ongevallen en Bewegen in Nederland,” OBiN) were valid in assessing adherence to physical activity guidelines. Participants (N=5187) aged 20 to 69 years were categorized as “inactive,” “semi active,” or “norm-active” according to the Dutch physical activity, the American College of Sports Medicine, and the combined guideline (adhering to either or both of two other guidelines) by the questionnaires and a combined heart rate monitor and accelerometer (Actiheart). Percentage of exact agreement and maximum disagreement (difference of two categories) for the categorization between questionnaires and Actiheart was calculated. The Short questionnaire to assess health-enhancing physical activity had a significant higher agreement than the OBiN for the Dutch physical activity and combined guideline. Both questionnaires had a low agreement regarding the American College of Sports Medicine guideline. The Short questionnaire to assess health-enhancing physical activity had a significant higher maximum disagreement than the OBiN for this guideline. The SQUASH was a more valid measure than the OBiN for categorizing adults according to the Dutch physical activity and
the combined guideline. Both questionnaires failed to correctly categorize adults according to the American College of Sports Medicine guideline.

Beurskens, et. al. evaluated (2000) the validity of the checklist individual strength questionnaire in the working population. This 20 item self reported questionnaire has often been used in patients with chronic fatigue. To date, no research has focused on the validity of the checklist individual strength in occupational groups. To evaluate the discriminant validity the checklist individual strength was filled out by five groups of employees with expected differences in fatigue. The convergent validity was evaluated by comparing the results of the checklist individual strength with the results of three related measures: measured uni-dimensional fatigue, burnout, and need for recovery. The checklist individual strength was able to discriminate between fatigued and non-fatigued employees in occupational groups. The expected agreement between the results of the checklist individual strength and related measures was confirmed. The checklist individual strength seems to be an appropriate instrument for measuring fatigue in the working population.

Martin, et. al. (2011) established the factor validity of the Questionnaire Assessing School Physical Activity Environment (Robertson-Wilson, Lévesque, & Holden, 2007) using confirmatory factor analysis procedures. Another goal was to establish internal reliability and test–retest reliability. The
confirmatory factor analysis results of this study supported a slightly altered version of the Questionnaire Assessing School Physical Activity Environment’s school physical activity environment subscale. Internal reliability was adequate, while test–retest reliability was questionable. In brief, the pattern of findings indicated that while the original Questionnaire Assessing School Physical Activity Environment is likely adequate for some research purposes, a slightly modified version (Questionnaire Assessing School Physical Activity Environment-R) was psychometrically stronger. However, given the distinct differences in samples used in the original validation study and the current study, more research on the psychometric properties of the Questionnaire Assessing School Physical Activity Environment is needed to determine if the current results and Robertson-Wilson et al.’s (2007) results are sample specific.

The contemporary concept of health literacy, which relates to the acquisition, understanding and application of health related information, has become an increasingly important public health issue, particularly where parents and children are concerned. Given that the home setting possibly comprises the strongest influence on children’s dietary and physical activity patterns, this study employed a qualitative approach to explore the factors that shape parents’ health related decision making for children, in everyday life.
Fourteen parents living in a low socio-economic region of South Australia, with children aged from birth to 12 years, were interviewed by means of semistructured focus groups and in-depth interviews. Participants provided insight into a number of barriers to making informed, healthy choices for children and emergent themes related to a two-tiered concept of physical health, the financial burden and time associated with maintaining physical health, and the effects of peer pressure. This paper will specifically focus on one aspect of the study findings, related to the ways that parents access, understand and apply health information related to children’s physical activity.

The positive association between parental socio-economic position and health among adolescents may be partly explained by physical activity behaviour. Finger, et. al. (2014) investigated the associations between physical activity, aerobic fitness and parental socio-economic position in a population based sample of German adolescents. 5,251 participants, aged 11–17 years, in the German Health Interview and Examination Survey for Children and Adolescents 2003–2006 (KiGGS) underwent a sub-maximal cycle ergometer test and completed a questionnaire obtaining information on physical activity and media use. The associations between physical activity, media use, aerobic fitness and parental socio-economic position were analysed with multivariate
logistic regression models for boys and girls separately. Odds ratios of parental socio-economic position (education, occupation and income) on the outcomes were calculated adjusted for age, region, and other influencing factors. Parental education was more strongly associated with the outcome variables than parental occupation and income. After adjusting for age and region, a higher parental education level was associated with better aerobic fitness – with an Odds ratios of 1.5 (95% CI 1.2-1.9) for girls whose parents had secondary education and 1.9 (1.4-2.5) for girls whose parents had tertiary education compared to girls whose parents had primary education. The corresponding Odds ratios for boys were 1.3 (1.0-1.6) and 1.6 (1.2-2.1), respectively. Higher parental education level was associated with lower media use: an Odds ratio of 2.1 (1.5-3.0) for girls whose parents had secondary education and 2.7 (1.8-4.1) for girls whose parents had primary education compared to girls whose parents had tertiary education. The corresponding Odds ratios for boys were 1.5 (1.2-1.9) and 1.9 (1.5-2.5), respectively. Higher parental education level was associated with a higher physical activity level only among girls: an Odds ratio of 1.3 (1.0-1.6) for girls whose parents had secondary education and 1.2 (0.9-1.5) for girls whose parents had tertiary education compared to girls whose parents had primary education. The corresponding Odds ratios for boys were 0.9 (0.8-1.2) and 0.8 (0.6-1.0), respectively. Adolescents of parents with low
socio-economic position showed a lower level of aerobic fitness and higher levels of media use than adolescents of parents with higher socio-economic position. Health-promotion interventions need to reach adolescents of parents with low parental socio-economic position and stimulate physical activity.

Peterhans, Worth and Woll (2013) analyzed the association between adolescent and familial health behavioral factors and cardio-respiratory fitness in German adolescent boys and girls. This study is based on a large nationwide cross-sectional study and its sub study on physical activity and fitness of children and adolescents ("Motorik-Modul"). For 1,328 adolescents between 11 and 17 years of age, data on cardio-respiratory fitness (Physical working capacity 170, PWC\textsubscript{170}) and familial and adolescent health behavioral factors were collected. Health behavior was assessed using psychometric questionnaires (socioeconomic status, pubertal stage, daily physical activity, sports-club time, parental physical activity habits, etc.). A hierarchical multiple regression model was used to quantify the association between relative PWC\textsubscript{170} values and health behavior. The relationship between adolescents' health behavioral factors and cardio-respiratory fitness was stronger than the relationship between age, social status, familial health behavior and cardio-respiratory fitness. Familial health behavioral factors explained 4.1% and 2.1% of variance in cardio-respiratory fitness in girls and boys, respectively.
Adolescents' health behavioral factors explained 15.2% of variance in girls and 25.7% of variance in boys. For both girls ($\beta = .273$) and boys ($\beta = .400$), being normal weight had the greatest effect on relative PWC$_{170}$ values. The difference in explained variance in cardio-respiratory fitness by familial and adolescents' health behavioral factors between girls and boys indicates that different predictors for cardio-respiratory fitness are important for girls and boys. Hence, sex specific research and interventions aimed at improving familial and adolescent health behavior may be important.

Cardiovascular fitness has been considered a health marker at all ages. The main purpose of this study was to examine whether meeting the current physical activity recommendations is associated with a healthier cardiovascular fitness level in adolescents. A total of 472 adolescents (14-16 years-old) were studied. Cardiovascular fitness was estimated from a maximal bike test and physical activity was objectively assessed by accelerometry. Students were classed as high/low- cardiovascular fitness level, according to the Cooper Institute's cut-offs, and having a high/low-physical activity level depending on if the adolescents were engaged in at least 60 min per day at moderate-vigorous physical activity intensity level. Body fat was estimated from skinfold thicknesses. Binary logistic regression showed that adolescent girls meeting the current physical activity recommendations ($\geq 60$ min/day of moderate-vigorous physical activity)
physical activity) were three times more likely to have a high-cardiovascular fitness level than girls that did not meet the recommendations, after controlling for sexual maturation status (Tanner stages) and body fat. Likewise, adolescent boys meeting the physical activity recommendations were eight times more likely to have a high-cardiovascular fitness level than boys that did not meet the recommendations. The results suggest that devoting 60 min or more to moderate-vigorous physical activity daily is associated with a healthier cardiovascular fitness level in adolescents, independent of maturation status and adiposity. The patterns of the association were similar in girls and boys, but the fact that the associations were weaker in girls is of concern.

To analyze the health-related physical fitness according to stages of sexual maturation in Brazilian adolescents (10 to 17 years-old) living in a small town of German colonization. This study was based on a broader project, a school-based cross-sectional epidemiological study conducted with adolescents from public schools (141 males and 129 females) in Sao Bonifacio, Southern Brazil. The Fitnessgram battery of tests was applied (body fat percentage, back-saver sit and reach test, curl-up and modified pull-up tests and 20m shuttle run test). Sexual maturation was self-assessed through stages of pubic hair development, being classified from P1 to P5. Results were analyzed by one-way variance analysis, Bonferroni post-hoc and Kruskal-Wallis tests. In
boys, body fat percentage was 11.4% higher in the P1 stage \( (p=0.04) \) and 10.2% higher in the P3 stage \( (p=0.01) \), compared to P5. The differences between maturational stages occurred in flexibility (5.1cm increase; \( p=0.03 \)), curl-up \( (p=0.04 \)), and pull-up tests \( (p<0.01) \) from stages P2 to P5. For girls, the mean \( \text{VO}_{2\text{max}} \) values were lower for those at the final maturation stages \( (p<0.01) \). The differences between stages of sexual maturation were observed in body fat percentage and muscle fitness for males and cardio-respiratory fitness for females. Effective measures to promote physical fitness should be addressed at early maturation stages for boys and for more mature girls.

Mota, et. al. (2014) analyzed the associations between cardio-respiratory fitness and body mass index (BMI) with self-rated health of adolescent girls. The study was cross-sectional with 533 adolescents girls, aged from 10 to 18 years old. Cardio-respiratory fitness was predicted by maximal multistage 20-m shuttle-run test according to procedures described from FITNESSGRAM. Girls' obesity status was classified according to International Obesity Task Force and Self-rated health was assessed by questionnaire. The findings showed that among adolescent girls 23.2% had negative self-rated health. Girls who were classified as unfit were more likely to report negative self-rated health in both univariate logistic \( (\text{OR}: 3.05; \text{CI}: 1.91-4.87; P < .05) \) and multivariate \( (\text{OR}: 2.93; \text{CI}: 1.82-4.72; P < .05) \) regression analyses compared
with their fit peers. Obese girls were more likely to report negative self-rated health (OR: 2.30; CI: 1.14-4.62; P < .05) compared with their normal-weight counterparts. However such association was lost in multivariate analyses suggesting an effect of cardio-respiratory fitness. Negative perception of health was associated with lower cardio-respiratory fitness and weight status although such association it is mediated by cardio-respiratory fitness condition.

**Geographic Differences in Physical Activity and Fitness**

Physical fitness had differed from place to place and varied from time to time. Knuttgen (1961) compared Danish and American school children and results indicated Danish children were superior to American children. Kraus and Hirschland (1954) found differences in physical fitness between American and European school children. Studies of Rosenstein and Frost (1964), Singh, Jayadhas (1983), Mookerjee (1978); and Tuteja (1978), etc., reveal that physical fitness differs due to regional differences.

The environmental conditions, nutritional set-up, topography, heredity, living style, etc., may influence individual’s physical fitness. People living at high altitudes may differ in their fitness when compared to people living in low altitudes. Different climatic conditions may affect physical performances.
Food habits certainly act upon individual’s fitness. likewise numerous other factors may also influence physical fitness (Prakash, 1995).

There is some speculation about geographic differences in physical activity levels. Martin, et. al. (2005) examined the prevalence of physical inactivity and whether U.S. citizens met the recommended levels of physical activity across the United States. In addition, the association between physical inactivity / physical activity and degree of urbanization in the 4 main U.S. regions (Northeast, Midwest, South, and West) was determined. Participants were 178,161 respondents to the 2000 Behavioral Risk Factor Surveillance System. Data from 49 states and the District of Columbia were included (excluding Alaska). States were categorized by urban status according to the U.S. Department of Agriculture. Physical activity variables were those commonly used in national surveillance systems (physical inactivity = no leisure-time physical activity; and physical activity = meeting a physical activity recommendation). Nationally, physical activity levels were higher in urban areas than in rural areas; correspondingly, physical inactivity levels were higher in rural areas than in urban areas. Regionally, the urban-rural differences were most striking in the South and were, in fact, often absent in other regions. Demographic factors appeared to modify the association. The association between physical activity and degree of urbanization is evident and
robust in the South but cannot be generalized to all regions of the United States. For the most part, the Midwest and the Northeast do not experience any relationship between physical activity and urbanization, whereas, in the West, the trend appears to be opposite of that observed in the South.

Physique, physical functions and motor fitness abilities were measured at four elementary schools in two Thailand cities in 1980. Children from four schools in the two cities were sampled. Children of a model school in Bangkok were found to have larger physiques on the average than those of the other three; public school, Mont-fort College and Regina Coeli. Children of a public school are shorter and lighter than the others on the average. Children of the model Mont-fort College and Regina Coeli schools in Chiang Mai have better motor fitness on the average than those of the two schools in Bangkok. Bangkok is a big city, where such factors as heavy traffic, lack of playgrounds and the tropical climate, hamper vigorous activity. Families of model school children are of higher socio-economic status in Bangkok. These environmental factors may play a part in the physical growth of children. The natural environment, abundant playgrounds and milder climate of Chiang Mai may be favorable for the development of motor fitness of children. Results of the study in Thailand have something in common with those in Japan. Differences in growth and development of children were found, and differences in some
environmental factors are recognized between the two regions. Lastly, some differences of physique and physical fitness between Thai and Japanese children were noted.

Few studies have analysed the rates and correlates of physical activity in economically and geographically diverse populations. Parks, Housemann and Brownson (2003) examined: (1) urban-rural differences in physical activity by several demographic, geographical, environmental, and psychosocial variables, (2) patterns in environmental and policy factors across urban-rural setting and socioeconomic groups, (3) socioeconomic differences in physical activity across the same set of variables, and (4) possible correlations of these patterns with meeting of physical activity recommendations. A cross sectional study with an over sampling of lower income adults was conducted in 1999-2000 with 1818 United States adults. Lower income residents were less likely than higher income residents to meet physical activity recommendations. Rural residents were least likely to meet recommendations; suburban residents were most likely to meet recommendations. Suburban, higher income residents were more than twice as likely to meet recommendations as rural, lower income residents. Significant differences across income levels and urban/rural areas were found for those reporting neighborhood streets, parks, and malls as places to exercise; fear of injury, being in poor health, or dislike as barriers to exercise
and those reporting encouragement from relatives as social support for exercise. Evidence of a positive dose-response relation emerged between number of places to exercise and likelihood to meet recommendations for physical activity. Both income level and urban rural status were important predictors of adults' likelihood to meet physical activity recommendations. In addition, environmental variables vary in importance across socioeconomic status and urban-rural areas.

Reis(2004) estimated levels of non-occupational leisure-time physical activity by degree of urbanization and geographic region of the United States. Participants were respondents to the Behavioral Risk Factor Surveillance System in 2001 (N=137,359). Moderate- and vigorous-intensity leisure-time physical activity was categorized as meeting recommended levels, insufficient, or inactive. The U.S. Department of Agriculture rural-urban continuum codes were used to describe degrees of urbanization (metro, large urban, small urban, and rural). Geographic regions were defined by the U.S. Bureau of the Census (Northeast, Midwest, South, and West). Prevalence estimates were calculated using sample weights to account for the design of the BRFSS. Multivariate logistic regression analyses examined regional differences in the odds of physical inactivity (physically inactive vs insufficient or meets) by degree of urbanization after adjustment for sex, age, race, BMI, education, and
occupational physical activity. Large urban areas (49.0%) and the western United States (49.0%) had the highest prevalence of recommended levels of leisure-time physical activity. Rural areas (24.1%) and the southern United States (17.4%) had the highest prevalence of inactivity. Adults living in the four urbanization categories of the mid western metro, large urban, small urban, and rural; and southern, large urban, small urban, and rural U.S. regions were more likely to be inactive than adults living in similar areas of the western United States. Adults in northeast metro and large urban areas were more likely to be inactive than those residing in western metro and large urban areas. The prevalence of physical inactivity varies by degree of urbanization and geographic region of the United States.

Physical inactivity and sedentary behaviour are known to be important risk factors for chronic diseases, but articles comparing prevalence in young people across countries are, especially for low and middle income countries, lacking. The objective of the study was to describe and compare levels of physical inactivity and sedentary behaviour in school children from 24 countries across four WHO Regions. The analysis included 96,072 schoolchildren from 24 countries that participated in the Global School-based Student Health Survey (GSHS) and conducted data collection between January 2003 and May 2007. The physical activity module of the questionnaire
included questions on overall physical activity, walking or biking to and from school and on time spent doing sitting activities. Alarmingly few students engaged in sufficient physical activity. In all countries, less than 2/3rds of the schoolchildren met public health recommendations, with the highest prevalence of inactivity in Egypt (90.8%, 95% CI: 86.8-94.8%) and the lowest in China (70.9%, 95% CI 67.8-73.9%). The prevalence of not walking or riding a bicycle to school ranged from 16.6% (95% CI: 10.2-22.9%) in China to 81.8% (95% CI: 79.5-84.2) in Cayman Islands. In more than half of the countries, over 1/3rd of the students spent three or more hours per day on sedentary activities, excluding the hours spent sitting at school and doing homework. In all analysed countries, prevalence of physical inactivity was very high. The great majority of students did not meet public health recommendations. These findings require immediate action, and efforts should be made worldwide to increase levels of physical activity among schoolchildren.

Aerobic fitness, or maximal oxygen uptake, and energy expenditure may be lower in African Americans than in whites. The objective of this study was to compare sleeping energy expenditure, resting energy expenditure, free-living total energy expenditure, and maximal oxygen uptake in African American and white women after adjustment for body composition and free-living activity-
related energy expenditure. Eighteen African American and 17 white premenopausal women were matched for weight, percentage body fat, and age. Sleeping energy expenditure and resting energy expenditure were measured in a room calorimeter and maximal oxygen uptake was measured on a treadmill. Fat-free mass and fat mass (4-compartment model), activity-related energy expenditure (doubly labeled water and sleeping energy expenditure), and regional lean tissue (dual-energy X-ray absorptiometry) were used as adjustment variables in sleeping energy expenditure, resting energy expenditure, total energy expenditure, and maximal oxygen uptake comparisons. The African American women had significantly more limb lean tissue and significantly less trunk lean tissue than did the white women. The African American women also had significantly lower sleeping energy expenditure (6.9%), resting energy expenditure (7.5%), total energy expenditure (9.6%), and maximal oxygen uptake (13.4%) than did the white women. Racial differences persisted after adjustment for maximal oxygen uptake, activity-related energy expenditure, Fat-free mass, and limb lean tissue but disappeared after adjustment for trunk lean tissue. The maximal oxygen uptake difference was independent of all body-composition variables and of activity-related energy expenditure. African American women had lower aerobic fitness than did white women, independent of differences in lean tissue
or activity-related energy expenditure. Diminished racial differences in sleeping energy expenditure, resting energy expenditure, and total energy expenditure after adjustment for trunk lean tissue suggest that low energy expenditure in African American women is mediated by low volumes of metabolically active organ mass.

Education has a positive relationship with economic development (Palanithurai, 2004; GOI, 1966). This argument is more valid in the context of developing countries (Devi, 1994 a). The economic growth model of development was questioned by the UNDP in its first human development report of 1990, which reiterate that people, not things, are the wealth of nations. In that direction human development is the process of building the capabilities to enable people to lead productive lives (UNDP, 1990). Education is the stepping stone and precondition for building capabilities (Devi, 1994 b). As human development reports reveal most of the South Asian countries are having low human development and India is one such (UNDP, 2010). Within India all the states are not having same level of human development and there occurs a wide range of disparities in human development of India based on gender, region and other factors (GOI, 2002).
Theoretically and empirically it has been found that males are more literate than females; forward regions are having higher literacy than backward regions and high income states having higher literacy rate than other states (Rampal, 2000; Premakumara, 2006; Kaul, 2001; Caseen, 2002). Therefore, there is dire need of inclusive growth policy to solve the problem exclusions.