

Physical and Health Education

C.G. VENKATESHA MURTHY
KULDIP KUMAR

INTRODUCTION

Physical and health education, and sports form an integral part of the educational process as they contribute to the all-round development of the human personality, especially in nurturing health, strength and fitness of the body; endurance; courage; decision-making; resourcefulness; respect for others; faithfulness; loyalty to duty and concern for the common goal.

RESEARCHES IN PHYSICAL AND HEALTH EDUCATION

The studies (reported studies) reviewed in this section have identified some of the correlates in this context. The studies indicate the state-of-the-art predominantly at the doctoral level during the period 1988 to 1992. The review covers studies in health education, physical education, sports, athletics and nutrition.

Health Education

Out of a total of 49 studies reviewed in this section ten are in the area of health education. Three of the studies are related to primary health care/education, and two are related to instructional/literacy materials. The variables examined in these studies and their salient findings are reflected in the following resume.

Potdar, R.S. (1989) examined factors related to mobilising education to reinforce primary health care through school-children as change

agents and revitalising the school health programme to attain the goal of 'Health for All by A.D. 2000'. The study reported that elementary school-teachers had inadequate knowledge of health education, and coordination among the authorities of education, social welfare and health departments was lacking. It was also found that health education and management of a school health programme were not included in the pre-service education of teachers, and teachers were unable to integrate the health education topics with other school subjects.

Kamble, G.N. (1989) studied health education in rural areas with a specific reference to Talegaon Dabhade Primary Health Centres (PHCs). It was found that the PHCs do not function well due to the adverse socio-economic profile of the rural population, caste and economic inequalities, high rate of illiteracy and inadequate information.

Panachakel, G.T. (1991) worked on health education and community development and found that the programme, 'Health for One Million' (HOM), helped in community development. It was reported that mothers can play a very important role in improving living conditions of their community and that voluntary effort is a critical factor in implementing a health based community development programme in rural areas. Stronger interaction among the members of the

programme played a vital role in the success of the programme.

Upadhyay, B. (1990) and Smitha, G. (1992) investigated issues related to literacy/instructional materials. Upadhyay, B. (1990), examined the development of literacy and post-literacy materials on health developed by the investigator for illiterates and neo-literates. Smitha, G. (1992) attempted to assess the efficiency of selected instructional materials developed for popularisation of wheat and wheat products, using an experimental design. It was found that the subjects exposed to instructional materials gained sufficient knowledge of wheat and the intervention became a success. It was concluded that if proper instructional materials are used health education will be effective.

Dhanasekeran, G. (1990) attempted to study the awareness of primary- and middle-school-teachers regarding health promotion among the school-children. It was found that primary- and middle-school-teachers had low awareness of health promotion measures, in general, and that the female teachers and urban teachers were a shade better than their counterparts in their awareness.

Vergheze, M. (1991) studied the health status of primary school pupils and its influence on achievement, for framing a school health programme. It was found that there is a significant association between health status, achievement and intelligence.

Pflung, B. (1988) conducted a study on the preventive aspects of *Ayurveda* in people's education. It was found that the *Ayurveda* Health Education is only a concept consisting of principles, and its practice does not exist.

Dhaliwal, S.S. (1992) studied the physical fitness of 10- to 18-year-old males, living at two selected altitudes, to ascertain the effect of geographical altitude on physical fitness. It was found that altitude does not affect height, weight, flexed arm hang, sit-ups, sprint (50-metre), forward bend and reach, and the 600-metre run/walk of males in the age-group of 10-18 years. In general, the higher altitude males performed better than the lower-altitude males

in standing broad jump and shuttle run. Further, affluence helps in increasing the height, weight and performance in sprint among the 10-18 years age-group but has a negative effect on their performance in forward bend and reach, the 600-metre run/walk. Affluence does not have any effect on flexed arm hang, sit-ups, shuttle run, and standing broad jump. Measures of physical fitness are interrelated in general for low-altitude non-affluent and high-altitude affluent groups but only rarely for the high-altitude non-affluent group.

Physical Education

Nine of the studies in physical education are doctoral studies on subjects ranging from an analysis of physical education as reflected in the ancient Krishna literature to the appraisal of contemporary physical education programmes in schools and colleges.

Tiwari, R.H. (1989) probed into the Krishna literature for the expression of physical education and reported that the ancient Indians practiced yoga, recreation and sports to achieve their needed skills in sports as well as to maintain good health.

Kasat, G. (1990) evaluated the physical education programme at school level in the Vidharbha region and found that 81% headmasters are satisfied with the physical education teachers, around 74% of the schools allot less than Rs.4500 per year, a majority of the schools have two periods per week, and 75% of the schools have some sort of a playground.

Mahajan, R.K. (1987) attempted an analytical study of sports facilities and programmes of physical education in the schools of Nepal. The study found that the physical education course in Nepal is an optional subject due to lack of sports facilities, classes are overcrowded, schools have inadequate playground facilities, only a few teachers are trained, and there was a financial crunch.

Akram, K.A.Z. (1992) studied the programmes and practices in physical education in the colleges of Vidharbha. Using questionnaires

and opinionnaires, the researcher has listed the programmes and practices. It is reported that in the majority of cases less than 50% of the desired sports activities have been allotted time for practice, and hardly any theory classes are held. In the majority of colleges, some fundamental skills are taught. Less than 50% of the popular games are practised. Most of the colleges are found raising money from students through fees and yet teachers felt that the funds are not sufficient.

As regards the quality of activities, it is reported that there is no linear progression from one class to the other, and hardly any activity was individualised. The findings call for reorientation of the objectives of physical education and highlight the importance of providing physical education in tune with the changing physical and psychological conditions of pupils.

Singh, D. (1992) studied sports achievements of secondary schools in Punjab in relation to the physical education programme, coaching and physical facilities. The study indicates that the provision of physical education programmes, physical facilities and coaching facilities has a positive effect on the sports achievement of schools. Further, physical facilities are more important than the coaching facilities.

Dhillon, S. (1990) compared physical education institutions in Punjab, Haryana and Delhi to understand the leadership behaviour, organisational climate and demographic characteristics of these institutions. It was found that the administrators are attaining organisational goals with the help of the faculty members. The leadership behaviour varies between the teaching and non-teaching departments. The faculty members have friendly social relations and are satisfied with their jobs, while the administrators are impersonal in their behaviour in leading their departments as compared to non-teaching departments in the universities. The rural and urban differences in terms of leadership behaviour and organisational climate are also observed. It is reported that the experience of the administrator contributes in

managing the affairs efficiently. With regard to organisational climate, the institutions examined in the study did not differ.

Sidhu, P.S. (1992) studied the professional competence of physical education school-teachers in relation to their intelligence, emotional maturity and self-esteem, and environmental facilities. The study found that intelligence, self-esteem, and environmental facilities contribute towards the professional competence of physical education teachers, but not emotional maturity.

Kaur, D. (1989) attempted to assess the physical fitness of high schoolgirls of Punjab, with the objectives of preparing norms of physical fitness—rural and urban—location-wise and age-wise, and to offer remedial measures for those who are below a certain standard for their age. The study found that rural and urban girls differ significantly in their physical fitness. The physical fitness norms reported in the study can serve as a ready reckoner for physical education teachers.

Singh, K. (1992) attempted to study physical fitness and personality traits of boxers. The study found that except for intelligence and placidity, boxers of different levels do not differ in their personality. However, higher-level boxers performed better in vertical jump, sit-ups, push-ups and 1.5 km run than lower-level boxers. Further, no relationship existed between the personality and physical fitness among boxers of different levels.

Sports

Fourteen studies have examined various aspects of sports.

Brar, H.S. (1991) analysed the policies of physical education and sports in India since Independence and listed out different policies of physical education.

Blah, M.D.H (1988) studied the role of the government in the promotion and development of sports and cultural activities in Meghalaya. The study found that the Meghalaya State has initiated schemes for providing training and

coaching facilities in various sports' and games' disciplines. The sports talent search scholarships have helped promising boys and girls to pursue various training programmes. The majority of the youngsters who joined these programmes do so without sacrificing their normal educational careers. Most of the training facilities in sports, games and fine arts are concentrated in the capital town of Shillong and have not spread to the other districts.

Desai, S.S. (1989) attempted to study the morphometric measurements of Nagpur University sportsmen to develop norms with reference to certain selected sports. The study found that there was a significant relationship between the structure and function of sportsmen in general.

Khodaskar, A.N. (1989) conducted a normative study of the cantability in male Kabaddi players and comparison of the effects of selected yogic and non-yogic exercises on cardio-respiratory endurance and cantability and cardio respiratory endurance in comparison with the non-yogic training programme.

Singh, D. (1991) studied the self-image, body-image and movement-image of sportsmen in relation to their level of participation. It was reported that the inter-university level gymnasts have higher 'real' self-image and 'real' movement-image but a lower 'ideal' self-image as compared to university-level gymnasts. However, the two groups did not differ on perceived self-image, real body-image and ideal movement-image. Further, for both the levels of gymnasts, the images of self, body and movement are in general related to each other.

Basra, S. (1991) studied the motor skills, physical fitness and selected psychological variables in male college hockey players. It was found that there are significant interrelationships among motor-skills components physical fitness and psychological variables, with a specific reference to personality attributes, among male college hockey players.

Kaur, P. (1992) conducted a comparative study of some psychological characteristics of women hockey players playing at different field

positions. The researcher collected data on 288 players. The selected psychological characteristics in the study included cohesiveness, cooperation, concentration, emotional stability, aggression and introversion-extroversion. The study revealed that women hockey players playing at different field positions did not differ from one another on cohesion, cooperation, concentration and introversion. Further, it was found that the left-outs and right-outs among players were more aggressive than the goalkeepers; goalkeepers are less emotionally stable than left-ins and right-ins, centre-halves and left-outs and right-outs. Among the waiting-group players, goalkeepers were more introvert than centre-half and left-ins and right-ins; and left-outs and right-outs and half-backs were less introvert than centre-halves.

Kumari, A. (1988) conducted a comparative study of self-concept, adjustment and creative thinking of sports and non-sports schoolgirls of Himachal Pradesh. The findings indicated that the sportsgirls belonging to rural and urban areas were better in physical, social and temperamental self-concept in comparison to the non-sports girls, while the non-sports girls were better in education, and moral and intellectual self-concept than the sports girls.

Parveen (1991) conducted a comparative study of *kho-kho* and basketball women players at inter-district and inter-state levels in their motor abilities, intelligence and personality traits. It was found that the basketball players were more mature emotionally; were practical, group dependent, relaxed; and had better muscular strength than the *kho-kho* players but had lesser speed. Further, the two groups were not found to differ significantly on their assertiveness, shrewdness, and discipline. The national-level players were more emotionally stable, more assertive, more shrewd, less group dependent, more relaxed, had more muscular strength, endurance and speed as compared to state-level players. The national-level and state-level players, however, did not differ on the practicality, discipline and intelligence variables.

A study of male and female adolescent

players in relation to their motor fitness, intelligence and emotional stability, was conducted by Kaur, N. (1991). The investigator found that as the age increases, intelligence, emotional stability and the motor fitness components become more interrelated. Girls of the 9 and 12 year groups have performed better than the boys in standing broad jump and squat throw. Further, high-intelligence players perform better than low-intelligence ones in modified pull-ups, side-stepping and standing broad jump. Sex and intelligence had an interaction effect on side-stepping, standing broad jump and modified pull-ups. Among the 12-year olds, intelligence and emotional stability did not have any interaction effect on the motor fitness components.

Kang, G.S. (1991) compared sportspersons and non-sportspersons with respect to their personality needs, adjustment and attitudes. The study concluded that significant differences exist between sportsmen and non-sportsmen, sportswomen and non-sportsmen, and sportsmen and non-sportswomen as well as non-sportsmen regarding various personality needs, adjustments and attitudes. Further, differences also exist between individual and team game sportsmen and sportswomen.

Sandhu, N.P.S. (1992) compared high school hockey players and non-players on their achievement motivation, SES, educational aspirations, and physical performances. The study found that the hockey players had a higher achievement motivation, higher SES, and higher educational aspiration and performed better in the 100-metre race and standing vertical jump, as compared to the non-players. The male hockey players were found to have a higher achievement motivation and performed better in the 100-metre race and standing vertical jump than their female counterparts. Participation affected the achievement motivation of females more than males.

Sandhu, K. (1988) conducted a comparative study of sportswomen and non-sportswomen in selected psychological and sociological variables. It was found that the sportswomen were found

to be more tough-minded, group-dependent and less submissive, shy and sober as compared to non-sportswomen. Further, among the sportswomen, the individual and team players differed. Sportswomen of team games were found to be less intelligent and more conservative, self-assured and relaxed than their individual-game counterparts. With regard to the SES, a lesser percentage of team-game sportswomen were from the upper-middle class and a higher percentage from the lower-middle class, as compared to individual-game sportswomen.

Athletics

The seven studies focusing on athletics examined the physical and psychological correlates of athletics or athletes. There are three studies on psychological biochemical correlates.

Banerjee, A.K. (1989) conducted a study on the performance evaluation of athletes in Eastern India, using physical and physiological parameters, with the objective of comparing the biological characteristics of athletes of different sports, assessing the functional capacities of the athletes, developing criteria of performance for prediction purposes and formulating a comprehensive performance index for objective evaluation. The investigator found that the overall stature of athletes in East India was slightly lower than in the case of the North Indian athletes. The structure of athletes differed among different sports; this could be attributed to the requirements of different events. In most of the physiological parameters, the football, athletics and swimming groups were significantly better than the *kabaddi*, gymnasium and *kho-kho* groups. The basketball group was close to the football group but was significantly different from all other groups. A cumulative performance index was developed for objective evaluation of athletes.

Singh, D.I. (1992) studied the motor abilities and physical and physiological characteristics of male adolescent gymnasts, track and field athletes and non-sportsmen. He concluded that

differences exist between gymnasts, athletes and non-sportsman regarding motor abilities and physical and physiological characteristics. Athletes perform better than gymnasts in medicine ball put, zigzag run, motor ability and anaerobic capacity, and have more weight and lower body fat. Gymnasts had higher scores than non-sportsmen in broad jump, medicine ball put, zigzag run, motor ability, anaerobic and aerobic capacity, and have shorter height and lower body fat. Sportsmen perform better than non-sportsmen in standing broad jump, medicine ball put, zigzag run, motor ability and anaerobic and aerobic capacity, and are heavier in weight and possess lower body fat. Among both sportsmen and non-sportsmen, age affects the motor abilities and the physical as well as physiological characteristics.

Bhowmik, S. (1989) worked on biomechanical analysis of swing movements in running and jumping. Using modern gadgets an attempt was made to analyse the biomechanical movements. It was found that, from the point of view of mechanics, the movements of the swing elements during the take-off action in running and jumping are similar in nature and purpose. Further, swing movements help in shifting the centre of gravity of the main body upward, produce an initial force for the main body movement and initiate a rotation movement of the main body around its longitudinal axis.

There are three studies related to the psychological characteristics of athletes in this section. Chatterjee, A.K. (1988) undertook a comparative study of the personality characteristics of rank athletes for identifying differential diagnostic features. It was found that the male and female athletes and non-athletes did not differ in their personality factors, while the rank athletes were characterised as more outgoing, venturesome, realistic and confident, and were emotionally better controlled than their non-rank athlete counterparts. Further, the rank athletes were high on enthusiasm and frustration tolerance than the non-rank athletes. Among the rank athletes, the 'explosive release'

and 'controlled release' types did differ significantly on factors, C, E, I, Q_2 , Q_3 and Q_4 in particular, meaning thereby that the 'explosive release' type were found to be more independent, tough-minded, self-sufficient and self-controlled than the 'controlled release' type who were found to be superior in the areas of emotional control and frustration tolerance.

Kelvadi, N.R. (1991) studied the relationship between burn out and locus-of-control among athletes. The researcher found that the sportsmen experienced burn out but when the individual and the team-playing sportsmen were compared, the difference was not statistically significant. Male sportsmen experienced more burn out than their female counterparts, especially on emotional exhaustion. Individual and team sportsmen did not differ on their locus-of-control orientation. Individual-event sportsmen are more individual in their orientation than team event sportsmen. Male and female sportsmen have no difference in their locus-of-control but have more external orientation. Sportsmen and non-sportsmen did differ in their relationship on depersonalisation and internality-externality.

Dass, C. (1991) studied the achievement motivation, adjustment and creative thinking of college athletes in relation to their performance in track events. It is evident from the findings that achievement motivation, adjustment and creativity are significant predictors of the performance of males in track events. Further, these three factors put together can predict the performance better in track events, than when they are taken separately.

A study by Khan, H.A. (1990) on the effect of special sports training on some physiological attributes of athletes revealed that the special sports training had positive effects on the psychological attributes of athletes. It emphasised the 'mind-body' unity in a functional manner.

Nutrition

Nine studies are covered in this area.

Paul, D and Kaur, T. (1989) conducted a study to assess the status of the nutrition component of the ICDS in different states. The study found that the food supplement was adequate for the malnourished children and women in ten projects out of 26. Due to the irregular supply of rations and calamities the food supplement did not reach other intended beneficiaries. With regard to nutrition and health education, the services varied from every day to once a month. Maternal care was the least attended. Community participation had a mixed response.

Pankajam, G. (1990) attempted to evaluate the mobile training teams in Tamil Nadu for structural and functional adequacies. The study found that the mobile training teams had ill-equipped people, inadequate audio-visual materials and books and gave less emphasis on pre-school education; and the mobile team was found to be less mobile.

Sreedevi, V. (1990) conducted a study with the specific focus on knowledge, attitudes and practices of nutrition among adult education programme instructors in Andhra Pradesh. The study revealed that knowledge, attitudes and practices were positively and significantly interrelated. Knowledge influenced practices, both directly and indirectly, as mediated by attitudes concurrently.

Gowri, K. (1991) conducted an impact study on nutrition education imparted through the mass literacy programme. The study revealed that nutrition education had a significant impact and enabled the experimental group to gain more knowledge of nutrition, and that their attitudes and practices were changed. The study recommended that the mass literacy programme should be utilised as a viable channel to impart nutrition education to the illiterate population, especially the illiterate village women.

Chandramani, M. (1988) also conducted an impact study on nutrition education at different levels, including pre-school, primary, secondary and higher secondary, and found that nutrition education had a positive impact on the children at all levels in terms of the nutritional knowledge

gained and attitudes and dietary practices. The study recommended that nutrition education should be integrated with the school curriculum at all levels.

Pattnaik, A. (1991) examined the nutritional status and its effects on physical development and educational achievement and found that physical development had its effect on the educational achievement of the children.

Ramamohan, V. (1990) studied the nutritional education for adolescents through games; such education aimed at creating and improving awareness of nutrition, using games as a medium. The investigator developed a nutrition-games kit containing 16 games, and using the kit found that the experimental group improved significantly in their knowledge related to nutrition and also on practical situation tests. Further, the follow-up study indicated that the knowledge gained was still retained by the learners.

Bhattacharya, S. (1991) conducted an experimental study which aimed at enhancing the level of pupil achievement through a community-contact intervention in the formal curriculum and for enhancing the perception and practices of community members in respect of nutrition, health and environmental sanitation (NHEES). The study was conducted in seven states, including Bihar, Karnataka, Maharashtra, Mizoram, Orissa, Rajasthan and Uttar Pradesh. The study found that differences existed between the total achievement of pupils belonging to project schools, non-project schools and project schools with community contact programme. Further, the pupils of Classes I-V of project schools performed better in the total test than those of non-project schools. Pupils of project schools with community contact programme schools performed better than the pupils of project schools.

Gopalan, C. (1989) conducted a study to assess the current status and relevance of community nutrition and health programmes through the health care system. The study reported that people were not aware of the nutrition health education programme. At the

top level, the people involved in the implementation of the programme believed that it was necessary but did not accord it a high priority. At the middle level, people were willing to do a good job but had either inadequate training or suffered from lack of proper aids in imparting knowledge effectively.

EMERGING TRENDS IN RESEARCH ON HEALTH AND PHYSICAL EDUCATION

The reviews of studies in the preceding sections have indicated the variables and the methodologies that have been followed in the recent past. The emerging trends in the reported studies are reflected in this concluding section.

Health Education

Promotion of primary health-care and education, reinforcing primary health-care through school health programmes, and effective coordination among different departments involved in health education have figured prominently as the major issues identified by scholars in health education. Research designs involving correlation analysis, limited sample studies with school or college students as subjects and results lacking generalisability have been the major characteristics of the reported studies.

Physical Education

The studies in physical education have compared the level of physical fitness of students and teachers of different regions, the organisational climate in different institutions of physical education and the personality correlates of physical education. The methodological characteristics of the reported studies are limited to correlational research designs with very limited potential for generalising the obtained results.

Sports and Athletics

Sportspersons and athletes have been the major target groups. Psychological and sociological

characteristics have been examined extensively. However, the findings of studies have limited practical implications.

Nutrition

The studies related to nutrition and their relationship with physical and health education have highlighted the process variables and the contribution of the literacy and education factors in effective programme implementation.

Scholars interested in taking up research studies in health and physical education may consider applications of the computer and user-friendly social sciences packages for statistical analysis. To enhance the generalisability of the research outcomes it may be necessary to focus on empirical studies in addition to the classical forms of research and to use a variety of available quantitative and qualitative research techniques.

REFERENCES

- Akram, Khataybeh A.Z. 1992. **A study of programmes and practices in physical education in the colleges of Vidarbha.** Ph.D., Edu. Nagpur Univ.
- Banerjee, A.K. 1989. **Performance evaluation of Eastern Indian athletes using physical and physiological parameters.** Ph.D., Edu. Univ. of Kalyani.
- Basra, Surjit Singh. 1991. **A study of motor skills, physical fitness and selected psychological variables in male college hockey players.** Ph.D., Edu. Punjabi Univ..
- Bhattacharya, Shukla. 1991. **Project nutrition health education and environmental sanitation: An impact study.** Independent study. New Delhi: National Council of Educational Research and Training.
- Bhowmick, S. 1989. **Biochemical analysis of swing movements in running and**

- jumping.** Ph.D., Edu. *Univ. of Kalyani.*
- Blah, Mary Dora H. 1988. **A study on the role of the government in the promotion and development of sports and cultural activities in Meghalaya.** M.Phil., Edu. *North-Eastern Hill Univ.*
- Brar, Harjinder Singh. 1991. **A critical analysis of the policies of physical education and sports in India since Independence.** Ph.D., Edu. *Punjabi Univ.*
- Chandramani, M. 1988. **Impact of nutrition education: Education at different levels.** Ph.D., Home Sc. *Avinashlingam Institute for Home Science and Higher Education for Women.*
- Chatterjee, Arun Kumar. 1988. **A comparative study of personality characteristics of rank athletes in the local school population for identifying differential diagnostic features.** Ph.D., Psy. *Univ. of Calcutta.*
- Chattopadhyay, Sandhya. 1989. **Ayurveda manastattwa (The science of mind according to ancient Hindu medical science).** Ph.D., Edu. *Univ. of Calcutta.*
- Dass, Charan. 1991. **Achievement motivation, adjustment and creative thinking of college athletes in relation to their performance in track events.** Ph.D., Edu. *Punjabi Univ.*
- Desai, S.S. 1989. **A study of morphometric measurements of Nagpur University sportsmen to evolve norms with reference to certain selected sports.** Ph.D., Edu. *Nagpur Univ.*
- Dhaliwal, Sutinder Singh. 1992. **Physical fitness of 10-18 year old males living at two selected altitudes.** Ph.D., Edu. *Punjabi Univ.*
- Dhanasekeran, G. 1990. **A study of the awareness of primary and middle school teachers regarding health promotion among school children.** M.Phil., Edu. *Madurai Kamaraj Univ.*
- Dhillon, Sukhjeet. 1991. **A study of the relationship among leadership behaviour, organisational climate and demographic characteristics in physical education institutions in Punjab, Haryana and Delhi.** Ph.D., Phy. Edu. *Punjab Univ.*
- Gopalan, C. 1989. **Study of the current status and relevance of community nutrition and health programmes through the health-care system.** Independent study. *New Delhi: Nutrition Foundation of India.*
- Gowri, K. 1991. **Impact of nutrition education imparted through mass literacy programme.** M.Phil., Home Sc. *Avinashlingam Institute for Home Science and Higher Education for Women.*
- Kamble, Goraknath, N. 1989. **Health education in rural areas: An in-depth study of Talegaon Dabhade Primary Health Centre.** M.Phil., Edu. *Indian Institute of Education, Pune.*
- Kang, Gurpreet Singh. 1991. **A comparative study of sportsmen and non-sportsmen with respect to their personality needs, adjustment and attitudes.** Ph.D., Edu. *Punjabi Univ.*
- Kasat, G. 1990. **An evaluation of physical education programme at secondary school level in Vidarbha region.** Ph.D., Edu. *Nagpur Univ.*
- Kaur Narinder. 1991. **A study of pre-adolescent players in relation to their motor-fitness, intelligence and emotional stability.** Ph.D., Edu. *Punjabi Univ.*
- Kaur, Daljit. 1990. **Assessment of physical fitness of high schoolgirls of Punjab.** Ph.D., Edu. *Punjab Univ.*
- Kaur, Prabhsharan. 1992. **A comparative**

- study of some psychological characteristics of women hockey players playing at different field positions.** Ph.D. Edu. *Punjabi Univ.*
- Kelvadi, N.R. 1991. **A study of the relationship between burn out and locus of control among athletes.** M.Phil., Psy. *Bangalore Univ.*
- Khan, Hussain Ahmed. 1990. **A study of the effect of special sports training on some psychological attributes of athletes.** Ph.D., Psy. *Panjab Univ.*
- Khodaskar, A.N. 1991. **Normative study of the cantability in male kabaddi players and comparison of the effects of selected yogic and non-yogic exercises on the cardio-respiratory endurance and cantability.** Ph.D., Edu. *Nagpur Univ.*
- Kumari, Aruna. 1988. **A comparative study of self-concept, adjustment and creative thinking of sports and non-sports school girls of Himachal Pradesh.** Ph.D., Edu. *Panjab Univ.*
- Maharajan, Ram Krishna. 1989. **Analytical study of sports facilities and programme of physical education in the schools of Nepal.** Ph.D., Edu. *Nagpur Univ.*
- Panachakel, Thomaskutty G. 1991. **Health education and community development.** Ph.D., Edu. *Pune: Indian Institute of Education.*
- Pankajam, G. and Shakuntala, N. 1990. **Evaluation of mobile training teams in Tamil Nadu.** Independent study. *Madurai Kamaraj Univ.*
- Parveen. 1991. **A comparative study of kho-kho and basketball women players at inter-district and inter-State level in their motor abilities, intelligence and personality traits.** Ph.D., Edu. *Punjabi Univ.*
- Pattnaik, A. 1991. **Nutritional status and its effects on physical development and educational achievement.** Ph.D., Home Sc. *Utkal Univ.*
- Paul, Dinesh and Kaur, Tejinder. 1989. **Status of nutrition component of ICDS.** Independent study. *New Delhi: National Institute of Public Cooperation and Child Development.*
- Pflug, Bernd. 1988. **The preventive aspects of Ayurveda in people's education.** Ph.D., Edu. *Univ. of Kerala.*
- Potdar, Rajkamal S. 1989. **Mobilising education to reinforce Primary Health-Care through school-children as change agents and revitalising the school health programme to attain the ultimate goal, 'Health for all by A.D. 2000'.** Ph.D., Edu. *Shreemati Nathibai Damodar Thackersey Women's Univ.*
- Ramamohan, Vijayalakshmi. 1990. **Nutrition education for adolescents (13-15 years) through games.** Ph.D., Home Sc. *Sri Venkateswara Univ.*
- Sandhu, Kiran. 1988. **A comparative study of sportswomen and non-sportswomen in selected psychological and sociological variables.** Ph.D., Edu. *Jamia Millia Islamia.*
- Sandhu, Nachhattar Paul Singh. 1992. **A study of achievement motivation, socio-economic status, educational aspirations and physical performances of high school hockey players and non-players.** Ph.D., Edu. *Punjabi Univ.*
- Sidhu, Pyara Singh. 1992. **A study of professional competence of physical education school teachers in relation to their intelligence, emotional maturity, self-esteem and environmental facilities.** Ph.D., Edu. *Panjab Univ.*
- Singh, Daljit Inder. 1992. **A study of motor abilities, physical and physiological**

characteristics of male adolescent gymnasts, track and field athletes and non-sportsmen. Ph.D., Edu. *Punjabi Univ.*

Singh, Darshan. 1991. **Self-image, body image and movement image of sportsmen in relation to their level of participation.** Ph.D., Edu. *Punjabi Univ.*

Singh, Darshan. 1992. **A study of sports achievement of secondary schools of Punjab in relation to physical education programme, coaching and physical facilities.** Ph.D., Edu. *Punjabi Univ.*

Singh, Kewal. 1992. **A study of physical fitness and personality traits of boxers at different levels of competition.** Ph.D., Edu. *Punjabi Univ.*

Smitha, G. 1992. **Assessing the efficiency of selected instructional materials developed for popularisation of wheat and wheat products.** M.Phil., Home Sc.

Avinashilingam Institute for Home Science and Higher Education for Women.

Sreedevi, V. 1990. **Knowledge, attitudes and practices of nutrition among adult education programme instructors in Andhra Pradesh.** Ph.D., Adult Edu. *Sri Venkateswara Univ.*

Tiwari, R.H. 1988. **Physical education as expressed in ancient Krishna literature.** Ph.D., Phy. Edu. *Nagpur Univ.*

Upadhyay, Basant. 1990. **Development of literacy and post-literacy material on health for illiterates and neo-literates.** Ph.D., Edu. *Dayalbagh Educational Institute, Agra.*

Verghese, Mary. 1991. **A study of the health status of primary school pupils and its influence on achievement for framing a school health programme.** Ph.D., Edu. *Univ. of Kerala.*