CHAPTER – II

REVIEWS OF RELATED LITERATURE

It is in every case better to know the opinions and ideas of specialists and past analysts on the side of the examination embraced. An all encompassing perspective on the connected writing becomes vital to have an obvious comprehension toward this path.

It is by and large recognized that the specialist should be perceptive of the writing in his space of interest prior to leaving upon an examination project. It is important to find out the best in class which figures out what is known regarding the subject, what questions have ascended from past work, which is needed for the examination and advantages can be acquired from the experience of different examinations. The current clarification of writing be that as it may makes it very hard for researchers to stay aware of the most recent data in this field. The prime focus of this research work was to evaluate the presence of physical and social vulnerability of coastal area children and to quantify the impact of adopted intervention in the research.

An earnest and academic endeavor has been made by the researcher to go through the relevant literature. A concise audit of the studies identified with the issue is depicted to get a full outlook of what has been managed with regard to the issues

under the examination. Reference of examination materials from the books, periodicals, journals, etceteras were collected to bring about a deep and clear prospects of the field of study, some of which are presented in the following heads

The research scholar has endeavored in this chapter to project the related literature of this research under the following four titles.

1. Studies Related to Coastal Area Children
2. Studies Related to Intervention of Physical Education Programme
3. Studies Related to Yoga Practices
4. Studies Related to Health Related Physical Fitness Variables
5. Studies Related to Psychosocial Variables

2.1 STUDIES RELATED TO COASTAL AREA CHILDREN

Azahari et al. (2019) compared physical fitness between urban and rural school children and to determine relationship between body mass index and physical fitness primary school children in east coast of Peninsular Malaysia. This study is a cross-sectional study and conducted in primary schools. Anthropometric measurement involved weight and height measurement, and body mass index (BMI) calculation. Fitness test that were measured are power and flexibility. Power was measured by using Standing Broad Jump (SBJ), and flexibility test was measured using Sit and Reach Test (SRT). Total number of subjects were 14880, 71% (n=10532) were classified in normal BMI, and remaining 10% (n=1423) were in obesity; 9% (n=1303)

were overweight, 8% (n=1164) were underweight; and 3% (n=458) were in severe thinness. In school area category, 59% (n=8769) rural school children and 41% (n=6111) urban school children. In conclusion, the current study found flexibility had shown a difference in area of school where urban school children performed slightly better than that of rural with F-value 2.09 (Pr>F= 0.15; p<0.05). It also showed a significant negative correlation between BMI and power (r= - 0.12) with p-value was 0.0001. However, there was no significant difference in power with areas of school, and no correlation between flexibility and BMI.

Ashbullby et al. (2013) explored the neglected issue of how families engage with beach environments in their local areas and use them in health promoting ways. Fifteen families with children aged 8–11 years living in coastal regions in Southwest England participated in individual semi-structured interviews. The findings indicate that beaches encouraged families to be physically active. Although families valued the opportunities for physical activity and active play afforded by beaches, the key health benefits emphasised were psychological, including experiencing fun, stress relief and engagement with nature. Increased social and family interaction was also highlighted as benefits. Despite perceiving health benefits, not all families regularly visited the beach. Barriers to visits included parents having limited time, cost of parking, lack of car access and cold weather. Parents played a key role in enabling visits by choosing to share these environments with their children. The social dimension of visits also

encouraged families to make regular trips. The findings support the use of beach environments to promote families' health and wellbeing and positive relationships with nature.

Wood et al. (2016) Childhood obesity is one of the 21st century's most serious global health challenges. Research suggests that better access to 'greenspace' (e.g. parks) may encourage physical activity and reduce the risk of obesity amongst children. We extend earlier work by considering childhood obesity in relation to proximity to the coast, using data from England's National Child Measurement Programme. Results suggest that although the overall prevalence of childhood obesity is slightly lower at the coast (−0.68% points comparing <1 km to >20 km, $p<0.001$), the relationship depends on area type. Specifically, although a coastal proximity gradient (lower obesity rates nearer the coast) was found for rural areas and smaller cities and towns, it was not present among large urban conurbations (interaction p-value<0.001). Coastal environments and access to them are changing in many areas, and research to explore potential impacts on child health is warranted.

Nettlefold et al. (2012) Physical activity (PA) is beneficially associated with arterial compliance in adults; however, whether this association persists in children is unclear. We examined the cross-sectional relationship of PA and sedentary time with arterial compliance in children. Large and small artery compliance was determined by diastolic pulse contour analysis in 102 children aged 8–11 years (43 boys). We

used accelerometers and age-specific cut points to classify activity as sedentary, light, or moderate-to-vigorous (MVPA). We also categorized MVPA according to bout length (0–5, 5–10, 10–20, and ≥20 min). Hierarchical linear regression examined: (i) the contribution of activity to large and small artery compliance (controlling for body surface area, systolic blood pressure, and body mass index (BMI)) and (ii) whether bouted MVPA was associated with arterial compliance independent of total MVPA. Activity variables did not explain any additional variance in large artery compliance beyond that captured by body surface area, BMI, and systolic blood pressure (P = 0.118 to P = 0.990). Light activity and MVPA explained an additional 5.8% (P = 0.003) and 2.7% (P = 0.043) of the variance in small artery compliance. MVPA accumulated in bouts was not significantly associated with small artery compliance after controlling for the total volume of MVPA (P = 0.784 to P = 0.923). Objectively measured PA is associated with small, but not large artery compliance in children aged 8–11 years. Future research should explore the influence of bout frequency and the effect of a PA intervention on arterial compliance.

Barnett, (2008) investigated whether perceived sports competence mediates the relationship between childhood motor skill proficiency and subsequent adolescent physical activity and fitness. In 2000, children's motor skill proficiency was assessed as part of a school-based physical activity intervention. In 2006/07, participants were followed up as part of the Physical Activity and Skills Study and completed

assessments for perceived sports competence (Physical Self-Perception Profile), physical activity (Adolescent Physical Activity Recall Questionnaire) and cardiorespiratory fitness (Multistage Fitness Test). Structural equation modelling techniques were used to determine whether perceived sports competence mediated between childhood object control skill proficiency (composite score of kick, catch and overhand throw), and subsequent adolescent self-reported time in moderate-to-vigorous physical activity and cardiorespiratory fitness. 928 original intervention participants, 481 were located in 28 schools and 276 (57%) were assessed with at least one follow-up measure. Slightly more than half were female (52.4%) with a mean age of 16.4 years (range 14.2 to 18.3 yrs). Relevant assessments were completed by 250 (90.6%) students for the Physical Activity Model and 227 (82.3%) for the Fitness Model. Both hypothesised mediation models had a good fit to the observed data, with the Physical Activity Model accounting for 18% ($R^2 = 0.18$) of physical activity variance and the Fitness Model accounting for 30% ($R^2 = 0.30$) of fitness variance. Sex did not act as a moderator in either model. Developing a high perceived sports competence through object control skill development in childhood is important for both boys and girls in determining adolescent physical activity participation and fitness. Our findings highlight the need for interventions to target and improve the perceived sports competence of youth.

Reilly, (2006) assessed whether a physical activity intervention reduces body mass index in young children. Cluster randomised controlled single blinded trial over 12 months. Thirty six nurseries in Glasgow, Scotland and 545 children in their preschool year, mean age 4.2 years (SD 0.2) at baseline. Enhanced physical activity programme in nursery (three 30 minute sessions a week over 24 weeks) plus home based health education aimed at increasing physical activity through play and reducing sedentary behaviour. Main outcome measure Body mass index, expressed as a standard deviation score relative to UK 1990 reference data. Secondary measures were objectively measured physical activity and sedentary behaviour; fundamental movement skills; and evaluation of the process. Group allocation had no significant effect on the primary outcome measure at six and 12 months or on measures of physical activity and sedentary behaviour by accelerometry. Children in the intervention group had significantly higher performance in movement skills tests than control children at six month follow-up (P=0.0027; 95% confidence interval 0.3 to 1.3) after adjustment for sex and baseline performance. Physical activity can significantly improve motor skills but did not reduce body mass index in young children in this trial.

Pate et al. (2004) described the physical activity levels of children while they attend preschools, to identify the demographic factors that might be associated with physical activity among those children, and to determine the extent to which children's physical activity varies among preschools. A total of 281 children from 9 preschools wore an Actigraph (Fort Walton Beach, FL) accelerometer for an average of 4.4 hours per day for an average of 6.6 days. Each child's height and weight were measured, and parents of participating children provided demographic and education data. The preschool that a child attended was a significant predictor of vigorous physical activity (VPA) and moderate-to-vigorous physical activity (MVPA). Boys participated in significantly more MVPA and VPA than did girls, and black children participated in more VPA than did white children. Age was not a significant predictor of MVPA or VPA. Children's physical activity levels were highly variable among preschools, which suggests that preschool policies and practices have an important influence on the overall activity levels of the children the preschools serve.

Giles-Corti & Donovan (2002) Spatial access to recreational facilities and perceptions of the neighbourhood environment and physical activity levels were examined by the socioeconomic status of area of residence (SES). A cross-sectional survey of adults (18–59 years) (n = 1,803) stratified by SES using a geographic-based index was conducted. Respondents in low SES areas had superior spatial access to many recreational facilities, but were less likely to use them compared with those

living in high SES areas. They were more likely to perceive that they had access to sidewalks and shops, but also perceived that their neighborhood was busier with traffic, less attractive, and less supportive of walking. After adjustment, respondents living in low SES areas were 36% less likely to undertake vigorous activity. While they were more likely to walk for transport, this was not statistically significant (OR, 1.27; 95% CI, 0.98–1.64), nor were other SES differences in walking for recreation and walking as recommended. Modifiable environmental factors were associated with walking and vigorous activity, especially perceived access to sidewalks and neighbourhood attractiveness. Spatial access to attractive, public open space was associated with walking. Creating supportive environments—particularly sidewalks in attractive neighbourhoods—has the potential to increase walking and vigorous activity.

2.2 STUDIES RELATED TO INTERVENTION OF PHYSICAL EDUCATION PROGRAMME

Kliziene et al. (2018) investigated the psychosocial adjustment and anxiety of adolescents during a 7-month exercise intervention programme. In addition, extensive research on the psychosocial adjustment of adolescents during intense physical activity was performed. The experimental group included adolescent girls (n=110) and boys (n=107) aged between 14 and 15 years while the control group included adolescent girls (n=99) and boys (n=112) of the same age group attending

the same school. The girls and boys in the EG participated in modified physical education lessons two times a week. Once a month they received a theory class where they were taught about communication disorders of adolescents and ways of preventing them by means of physical activities. In practical classes, the girls and boys in the EG had sports and games (basketball, volleyball and football) as well as Pilates, enhancing physical abilities. The measurement of psychosocial adjustment included the modification method developed by Roger and Daimond. The measurement of anxiety, the methodology of Reynolds and Richmond. In summarising the results of the 7-month exercise intervention programme of enhancing psychosocial adjustment and its components (self-esteem, dominance, positive self-evaluation, emotional comfort, internality, and evaluation by others) and decrease in anxiety in physical education lessons, we can state that after the intervention there are certain tendencies towards improved psychosocial adjustment that assists in overcoming various critical situations.

Kelly et al. (2021) examined the immediate and long-term effects of an 8-week FMS intervention programme on 255 Year 3 and 4 Irish school children's (50% male, 7.4 ± 0.6 yr) FMS proficiency levels. Participants were conveniently recruited from 4 schools and randomly assigned to the intervention-control (Group I-C: 2 schools, $n = 134$, 48% male) or control-intervention (Group C-I: 2 schools, $n = 121$, 52% male) sequence. Group I-C completed the intervention (i.e. two 45-minute FMS

classes per week in place of usual PE for 8 weeks) in phase 1, and after a 4-week washout, completed the control condition (i.e. routine PE lessons for 8 weeks) in phase 2, and vice-versa for Group C-I. FMS proficiency, assessed using the Test of Gross Motor Development-Third edition, and weight status based on body mass index (BMI) were recorded at 5 time points: pre and post phase 1, pre and post phase 2 and at 13-months post-intervention (i.e. follow-up). Linear mixed models revealed significant group × time interaction effects for locomotor, ball skills and total FMS scores (all $p < 0.001$) following engagement in the FMS intervention. No significant changes were observed following engagement in the control condition (i.e. Group C-I: pre to post phase 1 and Group I-C: pre to post phase 2; all $p > 0.05$). Significant improvements for locomotor, ball skills and total FMS scores were reported for both groups at follow-up compared to baseline (all $p < 0.001$). No significant group × time × gender or group × time × weight status interaction effects were reported (all $p > 0.05$). The proportion of participants who improved from poor-mastery to mastery/near-mastery was significant for eight skills, immediately following the intervention and from baseline to follow-up. Significant improvements in FMS proficiency were observed following a short-duration intervention that was delivered by an instructor with specialist FMS knowledge and an ability to create a mastery-oriented climate during lessons. Although the long-term effectiveness remains unclear, it is likely that mastery-oriented PE lessons could facilitate greater

improvements in FMS development for children of all abilities compared to traditional PE lessons. Future studies should explore if primary teachers feel they have sufficient confidence and pedagogical skills to support children's FMS development during PE.

Latorre-Roman et al. (2018) examined the effects of a 10-week aerobic games programme on physical fitness. One hundred eleven children, aged 3 to 6 years, participated in this study; 60 children were male (age: 4.28 ± 0.61 years old), and 51 were female (age 4.59 ± 0.49 years old). Participants were randomly assigned to an experimental group (EG; n = 56) and a control group (CG; n = 55). A fitness test battery previously validated for preschoolers was used. The children in the EG performed 3 weekly training sessions of physical activity in a classroom during a 10-week period. Every EG session lasted about 30 min. There were no significant differences in any variable in the pretest between groups. In the posttest, the EG achieved better results in horizontal jump and sprint. In relation to posttest–pretest differences, the EG showed a greater increase in horizontal jump, sprint, and endurance. An aerobic games programme in the school setting improved physical fitness in preschool children.

Arnauasalvador et al. (2020) aimed to test the effectiveness of a long-term physical exercise programme in postmenopausal women. Longitudinal design. Thirty-two women participated in this study (age 61.6 years). At the beginning of the

study, an evaluation of participants' physical condition, adherence to the Mediterranean diet (AMD) and different biochemical parameters were performed. When the initial results were obtained, a PA intervention programme was conducted. Three months after the start of the intervention, all the previous parameters were reassessed, and 6 months after the end of the intervention, the parameters were revaluated. In total, 90% of the women completed the programme. The intervention increases the level of PA and improves biochemical parameters. At 6 months after the end of the intervention, the positive effects of the PA programme were maintained, especially in agility ($p<0.01$) and resistance ($p<0.000$). Adherence to PA was observed after a physical exercise programme. For the entire study population, the exercise programme improved physical condition, and those indicators remained improved after 6 months. Additionally, increases in PA were associated with improvements in AMD.

Merino-Marban et al. (2015) examined the effects of a 1-minute stretching programme and 5 weeks of detraining on sit-and-reach score among schoolchildren aged 5–6 years in a physical education setting. Forty-five schoolchildren 5–6 years old from two classes were clustered randomly assigned to an experimental group (n = 23) or a control group (n = 22). During the physical education classes, the students of the experimental group performed a 1-minute stretching programme twice a week for 8 weeks. Subsequently, these participants underwent a 5-week detraining period. The

classic sit-and-reach test was performed at the beginning and at the end of the development programme, as well as at the end of the detraining period. The results of the two-way ANOVA showed that the intervention programme increased significantly the students' sit-and-reach scores ($p < 0.001$). However, after 5 weeks of detraining, children's flexibility reverted back to the baseline levels ($p > 0.05$). Although an only 1-minute stretching programme seems to develop the schoolchildren's flexibility, after the 5-week detraining period students' score reverts back to its initial level. This knowledge could help physical education teachers to design programmes that permit students to increase and maintain flexibility levels along the entire academic year.

2.3 STUDIES RELATED TO YOGA PRACTICES

Jain & Singh (2020) examined due to yogic practices on kinesthetic sense among school going children sixty male subjects were selected by simple random sampling technique. They were dividing into two groups of 30 each. 30 subjects were categorized as experimental group and another 30 subjects were taken as control group. All the students were in between the age group of 14 to 17 years. The Experimental group went for 3 months (5 days in a week) of treatment programme, both pre and post test were made for collection of data. The data collection was made on kinesthetic ability test by Arms Raising Test made by Scott. The collection data from the two groups before and after the experiment was statistically analysed by

using T-Test. The result of this study revealed that the experimental group shows significant improvement in kinesthetic sense as compared with control group.

Nandar & Ravindra (2020) examined a study to find out the effects of six weeks yoga training on physiological variables of government rural secondary school children, the variables are pulse rate and blood pressure. The training protocol has followed for six weeks. Every day after the assembly conditioning exercise subjects practiced the selected Asanas. 30 subjects have taken for the study. The selected physiological variables were assessed by using the standardized test manual. The collected data on the study indicate that there was significant difference on physiological variables. It was found that the rural school children are better in pulse rate after six weeks of yogic practices.

Nagajothi et al. (2020) investigated a study of aerobic capacity and anaerobic power of sedentary school girls of west Bengal. Subject: twenty five(n=25) sedentary school students were randomly selected as subjects for this study from Atulia Neta Adharsha Vidyapath, North 24 paraganas. The age ranged from 16-18 years. The study was confined in a single experimental group and no control group was considered. In the present study of aerobic capacity and anaerobic power were two variables. Aerobic capacity were measured in terms of maximum oxygen consumption during excersice i.e. VO2 max. Aerobic capacity & anaerobic power were measured respectively by Queens College Step Test and Margaria-

kalamenanaerobic power test. A structured yogic training was intervened for six week. Mean and Standard deviation statistical procedure was carried out. The mean of different variables were compared by using t-test statistical significance was tested at 0.05 levels. The results highlighted that there were the significant difference in aerobic capacity between pre and post treatment condition. On the other hand a significant difference was found in anaerobic power between the pre and post treatment condition.

Sujatha & Elangovan (2020) study was to find out the effect of Yogic practices on selected psychological variables among women student teachers. To resolve the purpose of the study 30 college women were randomly selected from Sarada college of Education student teachers (women) Salem. Their age ranged between 23 and 25 years. The selected subjects were randomly divided into two groups consisting of fifteen each. No attempt was made to equate the groups. Experimental Group I underwent Yogic practices (YPT) for a period of 12 weeks. Group- II acted as control group (CG) and were not engaged in any training programme other than their work. The subjects were free to withdraw their consent in case of feeling any discomfort during the period of their participation but there was no dropout during the study. The psychological variables namely anger, stress and anxiety were selected and anger was tested through Anger inventory, and stress and anxiety were taken though DASS inventory. Pre and post tests were conducted in all

the variables. Yogic practices was given to the experimental group for a period of 12 weeks. Dependent t test was used to determine the significant difference between the treatment means. Yogic practice group had significantly decreased in anger, stress and anxiety whereas the control group had no significant decrease in all the variables.

Yamamoto-Morimoto et al. (2019) evaluated a study on Positive effects of yoga on physical and respiratory functions in healthy inactive middle-aged people. For the study total of twenty eight participants with the average age 52.7 years were selected and they were divided into a yoga asana group and yoga asana with pranayama group. Participants attended a 70-min session once a week for 8 weeks. The yoga asana group practiced basic asana without specific breathing instructions, while the yoga asana with pranayama group practiced basic asana with specific breathing instructions (pranayama). Respiratory function was measured with an auto-spirometer. The result of the study showed that Both groups showed significant improvements in physical and overall respiratory functions after the 8-week yoga intervention. However, the maximal inspiratory pressure and lower extremity flexibility improved only in the yoga asana with pranayama group. Further it was concluded that the 8-week yoga intervention for healthy inactive middle-aged people improved the overall respiratory and physical functions, and the inclusion of pranayama had the added benefit of improving inspiratory muscle strength and global body flexibility.

Kumar & Parasuraman (2019) revealed a study of Ashtanga Vinyasa Surya Namaskar A&B (AVSN) practices on strength and balance among adolescence boys". To achieve the purpose of the present study, forty adolescence boys from Chennai district, Tamil Nadu were selected as subjects at random and their ages ranged from 15 to 19 years. The subjects were further classified at random into two equal groups of 20 subjects each such as Experimental Group and Control Group. Experimental Group underwent Ashtanga Vinyasa Surya Namaskar A&B (AVSN) Practices for thrice in a week for 6 weeks. Control Group (CG) did not participate in any special training apart from the regular day programme. The selected variables such as strength and balance were measured by using push up and Stork Balance Stand Test. The collected data were analysed statistically through analyse of covariance (ANCOVA) to find a significant difference. The results of the study showed that strength and balance were significantly improved due to Ashtanga Vinyasa Surya Namaskar A&B (AVSN) practices among adolescence boys.

Vidyashree et al. (2019) investigated the effect of yoga intervention on short-term heart rate variability in children with Autism spectrum disorder. In this study, fifty children (38 boys and 12 girls) with Autism spectrum disorder were recruited from Swabhimaan Trust, Palavakkam, Chennai. They were randomly grouped into Autism spectrum disorder with yoga intervention group (n = 25) and Autism spectrum disorder without yoga intervention group (n = 25) by simple lottery method. Yoga

group children underwent yoga training for 3 months, and the control group did not receive any such training. For short-term heart rate variability, 15 min electrocardiogram recording in sitting posture was recorded in lead II using a simple analog amplifier. In heart rate variability, time domain parameters such as mean RR interval, standard deviation of the NN intervals, and root of the mean squared differences of successive NN interval significantly increased in Autism spectrum disorder children after yoga intervention. In frequency-domain parameters, high frequency in n. u shows a significant increase and low frequency in n. u, and LF/HF ratio shows a significant decrease in Autism spectrum disorder with yoga intervention group children after 3 months of yoga training.

Pradnya et al. (2019) conducted a study on effect of yoga as an add-on therapy in the modulation of heart rate variability in children with duchenne muscular dystrophy. In this study, 124 patients with duchenne muscular dystrophy were randomized to Physiotherapy alone or Physiotherapy with yoga intervention. Home-based Physiotherapy and yoga were advised. Adherence was serially assessed at a follow-up interval of 3 months. Error-free, electrocardiogram was recorded in all patients at rest in the supine position. heart rate variability parameters were computed in time and frequency domains. heart rate variability was recorded at baseline and at an interval of 3 months up to 1 year. Repeated-measures ANOVA was used to analyze longitudinal follow-up and least significant difference for post hoc analysis

and $P < 0.05$ was considered statistically significant. The results of the study showed that with Physiotherapy protocol, standard deviation of NN, root of square mean of successive NN, total power, low frequency, high-frequency normalized units (HFnu), and sympathovagal balance improved at varying time points and the improvement lasted up for 6–9 months, whereas Physiotherapy and yoga protocol showed an improvement in HFnu during the last 3 months of the study period and all the other parameters were stable up to 1 year. Thus, it is evident that both the groups improved cardiac functions in duchenne muscular dystrophy. However, no significant difference was noted in the changes observed between the groups. Further it was concluded that the intense Physiotherapy and Physiotherapy with yoga, particularly home-based program, is indeed beneficial as a therapeutic strategy in duchenne muscular dystrophy children to maintain and/or to sustain HRV in duchenne muscular dystrophy.

Meshram & Meshram (2019) reported on effect of yogic exercise on resting heart rate variability-a study in central India. Being non-invasive technique has increased its use to measure the work load of individual. We assessed the effect of yogic exercise on resting heart rate variability by using resting heart rate variability software (AD-Instrument) in 20 healthy males of 18–20 years age both pre and post interventional. Practice of yogic exercise consist set of physical postures (asana), breathing techniques (pranayama) and meditation (dhyana). These were practised

35mins, 5times /wk for 6 months guided by certified yoga trainer. Analysis done by Student's paired 't' test of HRV revealed that all time domain parameters were increased while frequency domain parameters like low-frequency (LF) and LF/HF ratio were found to be decreased after practice of yogic exercise. Practicing yogic exercise has shown better improvement in autonomic balance by shifting towards parasympathetic predominance as suggested by resting heart rate variability.

Donahoe-Fillmore & Grant (2019) conducted a study on effects of yoga practice on balance, strength, coordination and flexibility in healthy children. To determined the purpose of this study a convenience sample of twenty six childrens in the aged group between 10–12 years was obtained. The children participated in 40 min yoga sessions, led by a registered yoga teacher, the training period limited with thrice in a week for 8 weeks. The result of the study showed that there was a statistically significant within-subject difference from pre-test to post-test for balance, sit and reach, popliteal angle right and left. There were no statistically significant differences in strength and bilateral coordination from pre-to post-test measurements. Further it was concluded that yoga may be a beneficial form of exercise in the school-based setting for improving balance and flexibility in healthy children.

Hayes (2019) examined the efficacy of a 6-week yoga intervention in improving reactive balance in older adults. Thirteen older adults were randomized into a yoga intervention group (n=7) or a control group (n=6). Subjects in the yoga

group participated in hour long classes, twice per week for six weeks. The results of the study showed that No statistically significant effects were noted between groups on response time. However, the low sample size likely compromises our ability to make definitive conclusions. This study is an early attempt to get very focused measures to evaluate yoga, using a balance task that emphasized heightened cognitive demand. With this study we were able to demonstrate the feasibility of using yoga as an intervention and provide insight for future studies looking at the potential effects of yoga on reactive balance in older adults.

Park & Kim (2017) investigated the effects of Iyengar yoga practice on the lower body imbalance in middle-aged women. The subjects (n=24), who had not performed yoga training prior to this study (and) were not attending any other training programs, participated after undergoing an X-RAY examination with the Gonstead Technique and then their lower body imbalance (was reevaluated). The subjects completed the yoga program for 12 weeks (3 times per week, 90 minutes per session). The results of the study suggest that Iyengar yoga training for 12 weeks reduces the pelvic imbalance and length differences between the right and left lower limbs in middle-aged females.

Polsgrove et al. (2016) To determine the impact of yoga on male college athletes (N = 26). Over a 10-week period, a yoga group (YG) of athletes (n = 14) took part in biweekly yoga sessions; while a nonyoga group (NYG) of athletes (n = 12) took part in no additional yoga activity. Performance measures were obtained immediately before and after this period. Measurements of flexibility and balance, included: Sit-reach (SR), shoulder flexibility (SF), and stork stand (SS); dynamic measurements consisted of joint angles (JA) measured during the performance of three distinct yoga positions (downward dog [DD]; right foot lunge [RFL]; chair [C]). Significant gains were observed in the YG for flexibility (SR, P = 0.01; SF, P = 0.03), and balance (SS, P = 0.05). No significant differences were observed in the NYG for flexibility and balance. Significantly, greater JA were observed in the YG for: RFL (dorsiflexion, l-ankle; P = 0.04), DD (extension, r-knee, P = 0.04; r-hip; P = 0.01; flexion, r-shoulder; P = 0.01) and C (flexion, r-knee; P = 0.01). Significant JA differences were observed in the NYG for: DD (flexion, r-knee, P = 0.01: r-hip, P = 0.05; r-shoulder, P = 0.03) and C (flexion r-knee, P = 0.01; extension, r-shoulder; P = 0.05). A between group comparison revealed the significant differences for: RFL (l-ankle; P = 0.01), DD (r-knee, P = 0.01; r-hip; P = 0.01), and C (r-shoulder, P = 0.02). Results suggest that a regular yoga practice may increase the flexibility and balance as well as whole body measures of male college athletes and therefore, may enhance athletic performances that require these characteristics.

2.4 STUDIES RELATED TO HEALTH RELATED PHYSICAL FITNESS VARIABLES

Cardiovascular Endurance

Das, Konai, & Ghosh (2021) observed the relationship between motor fitness and motor creativity of different groups of Rhythmic Activity. 30 students of varsity level were selected as the subjects of the present study. Subjects were divided into three groups, i.e. Dance, Aerobics and Bratachari group. Each group consists of 10 female students from different universities of West Bengal. To conduct the study selected motor fitness i.e. flexibility, static balance, coordination and cardiovascular endurance and test of motor creativity were taken. After collecting the data Mean, SD and co-efficient of correlation were calculated and the following conclusions were drawn1. In Motor creativity Dance and Aerobic group is better than Bratachari group.Static Balance is better in Aerobic group than Dance and Bratachari group.Motor creativity is not related with motor fitness and its components for all the three groups.

Dadgostar et al. (2020) aimed to determine the anthropometric indices and aerobic and cardiopulmonary capacity of Iranian elite female taekwondo athletes and also to investigate the relationship between the anthropometric indices and the cardiopulmonary capacity of this group of athletes at national and championship levels. For this purpose, 33 elite female taekwondo athletes (12 at national and 21 at

championship levels) participated in this study. The body fat percentage was measured by body impedance analyzer, and cardiopulmonary evaluation was performed using an incremental exercise test. Mean height, BMI (body mass index), and the body fat percentage were determined as 169.86 Â± 6.74 cm, 20.89 Â± 2.57 kg.m-2, and 22.54 Â± 5.44, respectively. The rates of VO2max and VO2@AT in the Cardiopulmonary Exercise testing (CPET) were 48.95 Â± 7.11 mL/kg.min and 60.43 Â± 6.43, respectively. Correlation results showed that VO2max was negatively correlated with the body fat percentage (r =-0.50, P = 0.003), BMI (r =-0.40 P = 0.02), and weight (r =-0.35, P = 0.044). Furthermore, it was found that the age factor was negatively correlated with HRMAX in CPET test (r =-0.46, P = 0.007) and exercise hours per week (r =-0.37, P = 0.031). The findings of this study revealed that the rate of VO2max, as the index of aerobic capacity among elite female taekwondo athletes, was about 50 mL/kg.min. Normal BMI, which was similar to that of the other taekwondo elites in the world, and an acceptable body fat percentage were reported in our study, while the body fat percentage was relatively higher than that of the other elite female taekwondo athletes in the world.

Seabra et al. (2020) examined the effects of a 6-month school-based soccer programme on cardiovascular (CV) and metabolic risk factors in overweight children. Methods: 40 boys [8–12 years; body mass index (BMI) >2 standard deviations of WHO reference values] participated in complementary school-based physical

education classes (two sessions per week, 45–90 min each). The participants were divided into a soccer group (SG; n = 20) and a control group (CG; n = 20). The SG intervention involved 3 extra-curricular school-based soccer sessions per week, 60–90 min each. The intervention lasted for 6-months. All measurements were taken at baseline and after 6-months. From baseline to 6-months, the SG significantly improved ($p < .05$) BMI z-score, waist circumference, waist-to-height ratio, percentage of fat mass, percentage of fat-free mass, diastolic blood pressure, total cholesterol, triglycerides, low-density lipoprotein cholesterol (LDL-C) and high-density lipoprotein cholesterol, but no such improvements were observed for the CG. After the intervention, the prevalence of soccer participants with normal waist-to-height ratio (30 vs. 5%; $p = .037$), systolic blood pressure (90 vs. 55%; $p = .039$), total cholesterol (80 vs. 65%; $p = .035$) and LDL-C (90 vs. 75%; $p = .012$) were significantly higher than at baseline. The findings suggest that a 6-month school-based soccer intervention program represents an effective strategy to reduce CV and metabolic risk factors in overweight children prepared to take part in a soccer program.

Muscular Strength

Cabeo & Lopez (2020) analyzed the relationship between body image and muscle strength in Spanish children and adolescents.230 Spanish school children participated (104 boys and 126 girls), between 3 and 15 years old with an average age of 9.05 ± 3.10 years. The body image was measured by the Stunkard silhouettes. The level of muscular strength was evaluated by manual dynamometry (Takei TKK 5101 dynamometer). The statistical analysis was carried out with SPSS 23.0. Significant positive correlations were found between the current body image and the level of muscular strength of the dominant side ($r = 0.182$, $p=0.027$), non-dominant side ($r=0.155$, $p = 0.002$), and average strength ($r = 0.171$, $p = 0.015$) of Spanish schoolchildren. According to sex, significant correlations were found between body image and strength in both boys and girls. According to age, the significant correlations between body image and strength were found in the Secondary Education group (12-15 years).The results of this study show that muscle strength can be a determining factor in the perception of body image of children and adolescents. It is recommended to carry out intervention programs with the aim of improving strength, because this will have positive effects on the body image of the participants.

Sun et al. (2020) The primary aim of this study was to establish sex and age-specific muscular fitness (MF) norms for Chinese children and adolescents aged 7–18 years old. The secondary aim was to compare their MF values with those of children

and adolescents in other countries and regions. The MF of 93,755 participants from China was evaluated by handgrip strength (upper limbs strength), sit-ups (trunk strength) and a standing broad jump (lower limbs strength), with a total of 90,424, 90,281 and 90,663 data values, respectively. The Lambda-Mu-Sigma (LMS) method was used to calculate smooth curves and table data. The MF of Chinese boys was higher than that of girls in all age groups. After the age of 11, the growth rate of boys accelerated while that of girls slowed down. Age-related changes were larger for boys than for girls. In the international comparison, all the MF indicators of Chinese children and adolescents were lower than those of their Japanese peers but were higher than those of their European peers, with the exception of handgrip strength. The results of this study can be used to evaluate, monitor and apply interventions that improve MF. They can also be used to compare trends across countries and regions.

Burns & Brusseau (2017) explored the associations among physical activity, muscular strength, and metabolic risk among children.The sample included 378 Portuguese children (213 girls; 9–11 years). Moderate-to-vigorous physical activity was assessed by accelerometry and children were classified as active (≥60 min/day) or insufficiently active (<60 min/day). Static strength was expressed as the ratio of handgrip strength/body weight and used to classify children as having high (≥P50) or low (<P50) muscular strength. Children were classified into four groups: active and high strength, active and low strength, insufficiently active and high strength,

insufficiently active and low strength. A continuous metabolic risk score was computed from cardiometabolic risk factors.In general, the insufficiently active and low strength group had the worst metabolic risk score, and the active and high strength group had the best. Significant differences were found within physical activity groups for metabolic risk: children classified as “active and high strength” and “insufficiently active and high strength” had better metabolic risk scores than “active and low strength” and “insufficiently active and low strength”, respectively. Muscular strength has a relevant role in attenuating the association between physical inactivity and metabolic risk in children; a further benefit was identified in children with high physical activity and high muscular strength.

Muscular Endurance

Chang et al. (2020) investigated the effects of a core conditioning in the warm-up routine of physical education classes on trunk muscular endurance, movement capability, and flexibility in this population. In these pre- and post-test control group experiments, 52 healthy, school-aged children (aged 10–11 years) were cluster randomized allocated to either the dynamic core exercise (DCE) group or general physical education (GPE) group. The DCE group performed a 10-min core exercise routine twice per week for six consecutive weeks; the GPE group performed traditional physical education warm-up exercises regularly. The children were assessed by conducting the trunk muscular endurance test (i.e., dynamic curl-up, static

curl-up, plank, and lateral plank), functional movement screen (FMS), and single-leg balance test before and after the intervention. At the end of the intervention, the DCE group demonstrated a significant effect on trunk muscular endurance, movement capability (i.e., FMS scores), flexibility, and balance (each $p < 0.001$, effect size: 0.38–1.3). Furthermore, the DCE group showed significant improvements in all outcome measurements compared with the GPE group ($p < 0.05$, effect size: 0.29–1.68). These data may provide a reference for incorporating additional core stability exercises in the warm-up routine of physical education classes in school-aged children in the future.

Thomas & Palma (2018) evaluated the fitness levels of different physical components in schoolchildren in southern Italy and identify age-related effects of physical performance. One hundred and fifty-four schoolchildren with ages ranging between 6 and 10 years (age 8.1 ± 1.45 years; 33.70 ± 10.25 kg; 131.50 ± 13.60 cm) were recruited for the investigation. Each scholar underwent a fitness-test battery composed of five elements. A Hand-Grip Strength Test to assess the strength of the hand muscles, a Standing Broad Jump Test to assess lower body explosive strength, a Sit-Up Test to exhaustion to evaluate abdominal muscular endurance, a 4 × 10-m Shuttle Run Test to assess agility, and a 20-m sprint test to assess speed. Cross-sectional analysis revealed that boys perform better than girls and that age affects performance. Lower limb measures show a significant increase after 8 years of age,

whereas upper limb measures show a significant increase at 7 and 10 years of age. No age-related differences were found in muscular endurance measures. It is possible to consider age-related performance measures to program exercise interventions that follow the growth characteristics of schoolchildren.

Blagojevic et al. (2017) established the effects of specially programmed circuit training on physical fitness in primary school children. A total of 58 (28girls) primary school children aged 11-13(experimental group 12.2±1.2, control group12.4±1.1) years voluntarily participated in this study. Physical fitness of children is assessed based on motor skills, through the following tests: abdominal muscle endurance - Sit-ups test, upper body strength and muscular endurance - Bent-arm hang test, upper-body muscular endurance – Push-ups test, muscular strength and power of the lower limbs - Standing broad jump test, agility and speed- 4x10m test and flexibility - Sit and reach test. During the regular classes of physical education, the experimental group conducted a circular training lasting 15-20 minutes, at the same time control group practiced exercises that were in accordance with the plan and program of teaching physical education for a particular teaching unit. The treatment lasted for 15 weeks, with two classes of physical education per week. The results for the standing broad jump indicated significant differences between groups following 15 weeks. Furthermore, the group that participated in the circuit training program made significantly greater gains compared to the control group ($p<0.05$) in bent-arm

hang, sit-ups and sit and reach. The results for the 4x10m test indicated no significant differences in time, group and their interaction ($p \geq 0.05$). To conclude, circuit training appears tobe an effective way of improving physical fitness in primary school children. The results of thisstudy indicate that this method was more effective for performance than traditional school program.

Flexibility

Cibinello et al. (2020) investigated the effects of an exercise program, based on the Pilates Matwork method, on posterior chain flexibility and trunk mobility in healthy school age children.The study was a parallel-group randomized clinical trial. The participants were randomly assigned to groups: Pilates Group (PG) and Control Group (CG). The program was developed at the Early Childhood Education Institute, 43 children with age between eight to 12 years, no prior knowledge of the Pilates method, and no exercise training in the last six months. Four months of twice a week 50 min Pilates Matwork exercises were administered.Flexibility and mobility, assessed using the sit-and-reach test, fingertip-to-floor test and photogrammetry. The assessors were blinded to the allocation of participants.Three children were excluded before randomization and 40 were randomized (PG n = 20; CG n = 20).12 children were excluded during the protocol (PG n = 7; CG n = 5) and included in the intention to treat analysis. No significant difference between groups was observed for flexibility measures. There was a significant difference in the following outcomes for the PG:

distance reached in the sit-and-reach test between pre-test (median 14.25[11.25–28.38]) and post-test (median 20.25[12.00–29.63]) (ES = 0.29, SRM = 0.73); Posterior angle of the knee in the fingertip-to-floor test between pre-test (median 191.60[187.20–191.60]) and post-test (median 189.00[185.90–191.50]) (ES = 0.56, SRM = 0.54). There were no differences in posterior chain flexibility and trunk mobility between school age children who underwent Pilates Matwork exercises and the control. However, children who participated in the exercise program showed improvement in some results of flexibility.

Sivanandha prabhu et al. (2021) investigated the realize the effect of bear walk and frog jumps on selected strength parameter Muscular strength and Flexibility underwent school boys students in the age group of 13 to 16 on health related physical fitness. To attain this purpose, 30 male school students were randomly selected as subjects from C.M.S. Higher Secondary School, Srivilliputtur, Virudhunagar District studying in various classes. The age of the subjects were ranged from 13 to 16 years. The subjects were formed a two group of 15 subjects each, in which group - I underwent Bear walk training and frog jump training for three days per week for eight weeks and group - II acted as control group who were not undergo any type of training programme. The chosen criterion variables such as Muscular Strength and Flexibility were measured before and after the training period. The collected data were statistically analyzed by using Analysis of Covariance (ANCOVA). From the

obtained results the study was found that there was a significant improvement on Muscular Strength and Flexibility for bear walk and frog jump group when compared with the control group.

Donahoe-Fillmore & Grant (2019) investigated the effects of yoga practice on balance, strength, coordination, and flexibility in healthy children aged 10–12 years. A convenience sample of 26 children, aged 10–12 years was obtained. The children participated in 40 min yoga sessions, led by a registered yoga teacher, 1–3 times per week for 8 weeks. The Bruininks-Oseretsky Test of Motor Proficiency, second edition (BOT-2), the sit and reach test, and the 90/90 hamstring flexibility test were administered at baseline and at the end of the 8 weeks. Descriptive statistics were calculated for all measurements. A Shapiro-Wilk test was used to test normality. A Wilcoxin signed-rank test was used to analyze pre- and post-test measurements for all variables.There was a statistically significant within-subject difference from pre-test to post-test for balance ($p = 0.026$), sit and reach ($p = 0.000$), popliteal angle right ($p = 0.005$), and popliteal angle left ($p = 0.018$). There were no statistically significant differences in strength and bilateral coordination from pre-to post-test measurements. Yoga may be a beneficial form of exercise in the school-based setting for improving balance and flexibility in healthy children.

2.5 STUDIES RELATED TO PSYCHOSOCIAL VARIABLES

Quality of Life

Karras et al. (2019) examined on developmental coordination disorder (DCD) is primarily a motor disorder, it can also impact emotional and psychosocial functioning of children with this condition. Evidence suggests that children with DCD experience lower quality of life than their peers, but few studies have explicitly examined the health-related quality of life (HRQOL) of these children.(1) describe HRQOL of children with DCD compared to typically-developing children; (2) compare HRQOL from the perspectives of children with DCD and their parents; and (3) explore predictors of HRQOL for children with DCD.Data from the KidScreen-52 and Strength and Difficulties Questionnaire were collected from 50 children with DCD [Mean(SD) age: 9.8 (1.2) years] and their parents and compared to normative data.Children with DCD and their parents report significantly lower HRQOL compared to published norms. Caregivers have a significantly lower perception of their child's HRQOL than their child's self-report in many domains. Parents of children with DCD report that their children experience significantly more emotional and behavioral disturbances compared to norms. Poor motor function and attentional difficulties predict HRQOL.DCD appears to contribute to lower perceived HRQOL. Findings inform therapeutic targets for children with DCD, beyond motor skill intervention.

his study examined the different aspects of quality of life in asthmatic children for the first time in this geographic area.

Germain et al. (2019) investigated a study on impact of disease and treatment on children's Health-Related Quality of Life (HRQoL) has given rise to an increasing use of child self-report and observer or proxy instruments. In this article, we review the status quo and challenges of HRQoL measurement specific to children under five. A number of HRQoL questionnaires exist for use with children and/or proxies, and both guidelines and reviews have been published on paediatric HRQoL. However, none address the challenges of measurement for children under five, for whom proxy measures should be used. In reality, there is significant heterogeneity in the cut-off age for self-report questionnaires. Recommendations are that proxies should be used for observable concepts, but not for concepts that require interpretation. Some research has been undertaken on dimensions/concepts in paediatric HRQoL questionnaires. However, no HRQoL models have been developed specifically for children, and heterogeneity in questionnaire dimensions underlines that there is no clear grasp of what HRQoL means in paediatric populations. There is a need to carry out research in order to develop theoretical models of HRQoL that are specific to children at different developmental stages, in order to evaluate and support new and existing measures for paediatric HRQoL and their use in clinical practice as well as clinical trials.

Kouzegaran et al. (2018) comparison of on quality of life in children with Asthma versus Healthy Children asthmatic group was 100 patients aged 8 to 12 admitted to the Asthma and Allergy Clinic of Ghaem Hospital (as) in Mashhad with the control group composed of 100 healthy children of the same age and gender. The standard questionnaire pedsQLTM was used for comparing the quality of life of children in the two groups. Statistical analysis was SPSS23 with P-value less than 0.05, which was statistically significant.In each group, 58 patients were boys, and 42 were girls. In a comparison of the quality of life of children, the asthma group with a mean total score of Peds QL 20.99 ± 12.54 compared to the healthy children with a mean total score of Peds QL of 8.8 ± 5.41 had a lower quality of life ($P < 0.001$). Moreover, regarding various aspects of quality of life asthma group had a lower quality of life in physical performance, emotional performance and performance in school ($P < 0.001$). Nonetheless, there was no significant difference between the two groups considering social function ($P = 0.267$). Examining the relationship between Peds QL score of patients with asthma with various variables was indicative of the fact that Peds QL scores were significantly correlated with the gender of the patients, showing better quality of life in the girls ($P = 0.001$). The results indicated that children with asthma have a significantly lower quality of life compared with healthy children of the same age. Also, in examining the different aspects of quality of life, these children had a lower quality of life in physical performance, emotional

performance, and performance at school, and were at the level as that of healthy children only in social performance.

Self Esteem

Fakunmoju et al. (2021) Studies consistently suggest that emotional intelligence and parenting styles are associated with self-esteem, although validation has relatively been based on correlation analysis. Using a sample of 252 respondents in Nigeria, the present study examined the relationships among parenting styles, emotional intelligence, and self-esteem with the aim of generating knowledge that transcends the nature and extent of their correlations. A bivariate analysis identified significant correlations: emotional intelligence (i.e., self-emotion appraisal, others' emotion appraisal, uses of emotion, and regulation of emotion), authoritative parenting, and authoritarian parenting significantly positively correlated with self-esteem. There was no significant correlation between emotional intelligence and parenting styles. Results of the independent-samples t test indicated that emotional intelligence and self-esteem differed by gender. Specifically, women were more likely than men to report high self-emotion appraisal, others' emotion appraisal, and uses of emotion. Similarly, women were more likely than men to report high self-esteem. Using multiple regression analysis, emotional intelligence and parenting styles were associated with self-esteem: being a student, emotional intelligence (i.e., self-emotion appraisal and uses of emotion), and authoritative parenting were associated with self-

esteem. Emotional intelligence accounted for a larger effect on self-esteem than did parenting styles. In general, findings lend credence to the relevance of authoritative parenting in the development of self-esteem and suggest that, among components of emotional intelligence, uses of emotion and self-emotion appraisal may be considered in facilitating improvement of self-esteem among young adults at the developmental stage of increasing self-esteem. Implications of findings for research, education, and practice are discussed.

Maharani et al. (2017) examined impacts of oral health on child self-esteem, school performance and perceived employability. The aim of this study was to determine levels of child oral health in primary school children in Indonesia, the prevalence of key causal factors; and, to determine relationships between oral health, self-esteem and school academic performance. Cross-sectional epidemiological study in a sample ($n = 984$) of children aged 6–7 and 10–11 years old attending three public schools in Indonesia. A dental visual impact study was conducted, in which teachers reported their perceptions of the impact of child oral health on school academic performance. Oral health behaviors, self-esteem, and school performance were assessed. The children were clinically examined to measure dental caries and oral cleanliness. Teachers believe that children with visually poor oral health and impaired smiles are more likely to perform poorly at school, be socially excluded and have lower job prospects than their peers with visually good oral health and healthy smiles.

The percentages of children with decayed teeth were 94 and 90% in the 6-7- and 10–11-year age groups, respectively. Families reported high levels of child consumption of sugar-containing foods and drinks; many had irregular use of fluoride toothpaste. Children with substantial plaque on their teeth achieved significantly lower levels of school performance than their peers with clean teeth. Significant associations were found between school performance and self-esteem for these children. The study findings highlight the need for preventive care programs to improve the oral health of children in Indonesia and prospective determination of associations between child oral health; self-esteem and school academic performance.

Boyes et al. (2018) investigated a study on children with reading difficulties are at elevated risk for externalising (e.g., conduct disorder) and internalising (e.g., anxiety and depression) mental health problems. Reading ability is also negatively associated with self-esteem, a consistent predictor of child and adolescent mental health more broadly. This study examined whether self-esteem moderated and/or mediated relationships between reading ability and mental health. One hundred and seventeen children (7–12 years) completed standardised reading assessments (Castles and Coltheart Test 2; CC2) and self-report measures of mental health (Strengths and Difficulties Questionnaire; SDQ) and self-esteem (Coopersmith Self-esteem Inventory). Non-verbal intelligence (IQ) was measured using the block design and matrix reasoning subscales of the Wechsler Abbreviated Scale of Intelligence, and

was controlled for in all multivariate analyses. Reading ability was negatively associated with internalising symptoms. This relationship was not moderated by self-esteem. Poor readers also reported more total difficulties and externalising symptoms, but only at low levels of self-esteem. There was no evidence that self-esteem mediated relationships between reading ability and mental health. Poor reading was associated with internalising symptoms. Self-esteem moderated the impact of reading ability on total difficulties and externalising symptoms, with high self-esteem buffering against negative impacts of poor reading. However, the reliability of the self-esteem scale used in the study was poor and findings need replication using a reliable and valid self-esteem measure, as well as other measures of child mental health. If replicated, future research should examine whether interventions aiming to improve self-esteem can reduce the risk of externalising problems in children with reading difficulties.

Depression

Lindberg et al. (2020) investigated whether obesity increases the risk of anxiety or depression independently of other risk factors in a large cohort of children and adolescents, using robust measures with regard to exposure and outcome. Children aged 6–17 years in the Swedish Childhood Obesity Treatment Register (BORIS, 2005–2015) were included (n = 12,507) and compared with a matched group (sex, year of birth, and area of residence) from the general population (n = 60,063).

The main outcome was a diagnosis of anxiety or depression identified through ICD codes or dispensed prescribed medication within 3 years after the end of obesity treatment. Hazard ratios (HRs) with 95% confidence intervals (CIs) from Cox proportional models were adjusted for several known confounders. Obesity remained a significant risk factor for anxiety and depression in children and adolescents after adjusting for Nordic background, neuropsychiatric disorders, family history of anxiety/depression, and socioeconomic status. Girls in the obesity cohort had a 43% higher risk of anxiety and depression compared to girls in the general population (adjusted HR 1.43, 95% CI 1.31–1.57; $p < 0.0001$). The risk in boys with obesity was similar (adjusted HR 1.33, 95% CI 1.20–1.48; $p < 0.0001$). In sensitivity analyses, excluding subjects with neuropsychiatric disorders and a family history of anxiety/depression, the estimated risks in individuals with obesity were even higher compared with results from the main analyses (adjusted HR [95% CI]: girls $= 1.56$ [1.31–1.87], boys $= 2.04$ [1.64–2.54]). Results from this study support the hypothesis that obesity per se is associated with risk of both anxiety and depression in children and adolescents.

Fernandez – Martínez et al. (2019) investigated on effectiveness of the program super skills for life in reducing symptomsof anxiety and depression in young Spanish children super Skills for Life (SSL) is a trans diagnostic prevention program designed for children with anxiety and depressive symptoms based on cognitive-

behavioural therapy. This study is a trial of the efficacy of the SSL program to reduce anxiety and depression symptoms in a representative sample of Spanish children aged 6 to 8. Method: This cluster randomized controlled trial involved 123 Spanish speaking children recruited from 10 schools. Schools were the unit of randomization, and were randomly assigned to one of two experimental conditions: intervention group (SSL) and waiting list control (WLC) group. Assessments were conducted before and after the 8-week intervention. Results: Generalized estimating equations showed that, compared with WLC, the intervention significantly reduced emotional symptoms of anxiety and depression. Significant improvements were also found in specific symptoms of anxiety disorders, and in the interference of anxiety in the child´s life. Conclusions: The findings of this study provide initial support for the immediate effects of SSL, suggesting that it is a valuable resource for the early reduction of anxiety and depressive symptoms in young Spanish-speaking children.

Bressington et al. (2019) assessed the effectiveness of a yoga-based social-emotional wellness promotion program, *Transformative Life Skills* (TLS), on indicators of adolescent emotional distress, prosocial behavior, and school functioning. Participants included 159 students attending an inner-city school district who were randomly assigned to treatment or business-as-usual comparison conditions. Results suggested that students who participated in the TLS program demonstrated significant reductions on unexcused absences, detentions, and increases

in school engagement. Significant concurrent improvements in primary engagement stress-coping strategies and secondary engagement stress-coping strategies were noted as well. Specifically, significant increases in student emotion regulation, positive thinking, and cognitive restructuring in response to stress were found. No effects were found for measures of somatization, suspensions, academic grades, or general affect. Student report of treatment acceptability indicated that the intervention was generally well-received and strategies were perceived as socially valid by most participants. Implications and directions for future research are discussed.