REVIEW OF LITERATURE

The present chapter focuses on analyzing the actual research problem by exploring the various gaps in the current selected research area. Several journals, articles, books, scientific approaches, discussion with experts were collected to boil down with the crux of the literatures done so far . The following are the list of reviews that were investigated by various researchers at different point of time.

2.1 STUDIES RELATED TO THE GAME OF HOCKEY AND ITS SKILLS

Agashe C.D (2013) compared the positive mental health of male hockey players representing various public sector and defense services teams in national level hockey tournaments. 50 male national hockey players (Ave. age 24.33 yrs.) employed in various public sector undertakings as well as 50 male national hockey players (Ave. age 25.97 yrs.) employed in various defence organizations of India were selected as sample. Positive mental health of the subjects were assessed by three dimensional Mental Health Inventory prepared by Agashe and Helode (2007). Results reveals that male national hockey players employed in defense services showed significantly more magnitude of positive mental health as compared to their counterparts employed with public sector undertakings. The study concluded that defense service personnel representing their parent institute in national hockey tournaments have significant superior positive mental health as compared to hockey players their public sector institutes.

Anne Tjønndal (2016) reported that Sport is considered as a masculine area of social life, and few sports are more commonly associated with traditional norms of masculinity than ice hockey. Ice hockey is played with a great level of intensity and body contact.

This is true for both men and women's hockey. However, men's ice hockey in particular has been subjected to criticism for its excessive violence. Sport has also been analyzed as an arena where boys and men learn masculine values, relations, and rituals, and is often linked to orthodox masculinity in particular. Tolerance for gender diversity and diverse forms of masculinity has generally increased during the last 30 years. However, orthodox masculinity seems to maintain a dominate position in sports, particularly in hyper-masculine sports such as ice hockey. In this article, narratives of masculinity and violence in professional ice hockey are a central focus. Through a narrative analysis of the biographies of two former National Hockey League (NHL) players, Bob Probert and Derek Boogaard, explored how narratives of masculinity and violence among hockey players have been described and how these narratives tell stories of the interplay between masculinity and violence in modern sport. The analysis illustrates how the narratives of the lives and careers of these athletes provide insight into the many personal risks and implications athletes in highly masculine sporting environments face. The analysis also illustrates how the common acceptance (and sometimes encouragement) of player violence and 'violence against the self' in ice hockey has led to many broken bodies, lives, and careers among professional male athletes.

Changyoung Lee (2014) evaluated the effectiveness of a complex training program on skating abilities in ice hockey players. Ten male ice hockey players (training group) that engaged in 12 weeks of complex training and skating training and ten male players (control group) that only participated in 12 weeks of skating training completed on-ice skating tests including a 5 time 18 meters shuttle, t-test, Rink dash 5 times, and line drill before, during, and the training. Significant group-by-time interactions were found in all skating ability tests. The complex training program intervention for 12 weeks improved their skating abilities of the ice hockey players.

Chris F et al (2007) attempted to identify off-ice variables that would correlate to on-ice skating sprint performance and cornering ability. Previous literature has not reported any off-ice testing variables that strongly correlate to on-ice cornering ability in ice hockey players. Thirty-six male hockey players aged 15–22 years (mean ± SD: 16.3 ± 1.7 years; weight = 70.8 ± 10.4 kg; height = 175.6 ± 4.1 cm) with an average of 10.3 ± 3.0 years hockey playing experience (most at AA and AAA levels) participated in the study. The on-ice tests included a 35-m sprint and the cornering S test. The off-ice tests included the following: 30-m sprint, vertical jump, broad jump, 3 hop jump, Edgren side shuffle, Hexagon agility, side support, push-ups, and 15-second modified Wingate. The on-ice sprint test and cornering S test were strongly correlated ($r = 0.70$; $p > 0.001$). While many office tests correlated with on-ice skating, measures of horizontal leg power (off-ice sprint and 3 hop jump) were the best predictors of on-ice skating performance, once weight and playing level were accounted for. These 4 variables accounted for a total of 78% ($p > 0.0001$) of the variance in on-ice sprint performance. No off-ice test accounted for unique variance in S-cornering performance beyond weight, playing level, and skating sprint performance. These data indicate that coaches should include horizontal power tests of off-ice sprint and 3 hop jump to adequately assess skating ability. To improve on-ice skating performance and cornering ability, coaches should also focus on the development of horizontal power through specific off-ice training, although future research will determine whether off-ice improvements in horizontal power directly transfer to improvements in on-ice skating.

Edwards (2004) studied the value of various forms of physical activity, exercise and sport for the promotion of mental health has been emphasised in recent research and intervention programs. This research investigated the relationship between sports involving diverse types of

regular exercise, namely hockey and health club activities (team and individual sports involving relatively more aerobic and resistance exercise respectively), and various components of psychological well-being and physical self-perception. Comparisons between 60 university hockey players, 27 health club members and 111 non-exercising students revealed that both hockey players and health club members were generally more psychologically well and had more positive physical self-perception than non-exercising students. Hockey players had significantly higher means than health club members on positive relations with others, sports competence and sport importance. While health club members' means were clearly higher than hockey players on environmental mastery and perceptions of body attractiveness, these relationships did not reach statistical significance.

Hamed Ibrahim Hassan (2018) investigated the relationship between strength and linear or non-linear sprint performance variables in U19 male field hockey players during the midseason time. Twenty eight players from Sharkia Hockey Club participated in current study with anthropometric data of mean±SD (age=17.57±1.23 years, height=1.71±0.05 meter, body weight=66.05±5.93 kg and body mass index=22.61±1.78 kg/m^2). Participants were measured for lower limb strength (vertical height jump, power and standing long jump), liner sprint (sprint over 30meters with different short distance included) and non-linear sprint performance (L running and zigzag measures). The relationships between physical fitness qualities were assessed by Pearson product-moment correlation coefficient. There were a moderate relationship between VJ height and sprint 20m and 30m performances, (r=0.66 and 0.63), respectively. Likewise, similar moderate relationships observed between power and sprint 20m and 30m performances (r=0.62 and 0.61), respectively. In addition, no significant relationships observed with other sprint distances or change of direction measures when correlated to other variables of VJ and

power results. The study concluded that, the knowledge of relationships between strength and cyclic or acyclic sprint performances at various distances would allow coaches to structure the field hockey training drills.

Hermiston R T et al., (1979) compared the test result times of 3 different hockey skills with the individual player ratings of coaches. By making these comparisons to the control rating, each test was evaluated as a predictor of hockey ability. The hockey players were all between the ages of 12 and 20 years of age and all 90 players were competitive team players. The three hockey skills tests were: the Illinois Agility Skate, the Finnish Skills Test, and the Hermiston Hockey Ability Test. Each player was allowed 3 trials and the best times were recorded in all cases. The preliminary results indicate that the Hermiston Hockey Ability Test was the best predictor (r = .7) with the results of the other two tests showing a coefficient of correlation of approximately 0.5. It was therefore concluded that in a competitive team of hockey, players' ability can best be assessed by using the Hermiston Hockey Ability Test. The two other tests were not as successful in their prediction of ability when compared to the criterion variable of coaches' ratings.

Izham I M and Kassim Mohar (2016) investigated the relationship between imagery technique in sport psychology with individual preparation and performance among men's hockey goalkeepers. The sample involved 45 male hockey goalie selected through random sampling. The findings will analyze by using computer software, Statistical Package for Social Science (SPSS) version 21. The expected results of the analysis will indicate two important findings: first, the imagery technique that used as a mental exercise has a significant correlation between the performances of the preparation of intermediate effects and second, it has a significant relationship between preparation and performance of intermediate effects. The results of this

study are very important to help improve the performance of the national hockey team, increasing research in this field and also to serve as a guide to the national hockey team athletes, especially men's hockey goalkeeper.

Jesuraj. A (2016) constructed the skill test battery to predict the playing ability in Hockey. To achieve the purpose initially ten tests were designed by the investigators, after analysing the various factors. As an initial step, a pilot study was conducted to thirty subjects for finalizing the final test battery. After the pilot study five skill test items were finalised by keen observation and consultation with the experts. The Five skill test items were administered to ninety six school level Hockey players from Tirunelveli region and their age ranged from 14 to 16 years. To find out the objectivity, reliability and validity the correlation co-efficient was used. Further stepwise multiple regression was used to predict the playing ability of Hockey players. The results revealed that the validity of the skill test item was ensured up to the 5-item module, namely power dribble, speed dribble, zig zag dribble, long pass, and short pass. The addition to other tests does not enhance the validity of the test battery. The fitted multiple regression equation for prediction of the Hockey playing ability will be: BBPA: 6.83+1.45x1-0.13x2+0.63x3-0.75x4+0.36x5. From that it can be said that the final skill test items as a 5-item package correlate significantly with the playing ability of the subjects.

Kassim Mohar and Izham I M (2016) investigated the relationship between self-talk technique in psychology of sport with individual preparation and performance among men's hockey goalkeeper. The sample involved 45 male hockey goalie selected through random sampling. The findings will analyze by using computer software, Statistical Package for Social Science (SPSS) version 21. The expected results of the analysis will indicate two important findings: First, the

self-talk skills that used as a mental exercise has a significant correlation between the performances of the preparation of intermediate effects and second, it has a significant relationship between preparation and performance of intermediate effects. The results of this study are very important to help improve the performance of the national hockey team, increasing research in this field and also to serve as a guide to the national hockey team athletes, especially men's hockey goalkeeper.

Lemmink et al (2004) determined the reliability of two field hockey specific tests: the shuttle sprint and dribble test (Shuttle SDT) and the slalom sprint and dribble test (Slalom SDT). The shuttle sprint and dribble performances of 22 young male and 12 young female field hockey players were assessed on two occasions within 4 weeks. Twenty one young female field hockey players took part in the slalom sprint and dribble test twice in a 4 week period. The Shuttle SDT required the players to perform three 30 m shuttle sprints while carrying a hockey stick alternated with short periods of rest and, after a 5 minute rest, three 30 m shuttle sprints alternated with rest while dribbling a hockey ball. The Slalom SDT required the players to run a slalom course and, after a 5 minute rest, to dribble the same slalom with a hockey ball. Results indicated there were no differences in mean time scores between the two test sessions. The mean differences were small when compared with the means of both test sessions. With the exception of the slalom sprint time, zero lay within the 95% confidence interval of the mean differences indicating that no bias existed between the two measurements. With the exception of delta shuttle time (0.79), all intra class correlation coefficient values for the Shuttle SDT, met the criterion for reliability of 0.80. Intraclass correlation coefficient values for Slalom SDT were 0.91 for slalom sprint time, 0.78 for slalom dribble time, and 0.80 for delta slalom time. It was

concluded that the Shuttle SDT and the Slalom SDT are reliable measures of sprint and dribble performances of young field hockey players.

Marije T. Elferink-Gemser (2007) identify performance characteristics that could help predict future elite field hockey players, we measured the anthropometric, physiological, technical, tactical, and psychological characteristics of 30 elite and 35 sub-elite youth players at the end of three consecutive seasons. The mean age of the players at the end of the first season was 14.2 years (*s* = 1.1). Repeated-measures analyses of covariance, with standard of performance and measurement occasion as factors and age as a covariate, showed that the elite players fared better than the sub-elite players on technical and tactical variables. Female elite youth players also scored better on interval endurance capacity, motivation, and confidence. Future elite players appear to have excellent tactical skills by the age of 14. They also have good specific technical skills and develop these together with interval endurance capacity better than sub-elite youth players in the subsequent 2 years. To verify our conclusions, we will be tracking these players into adulthood.

Martin Mrazik (2016) evaluated the psychological outcomes arising from sport concussions. Participants included AA and AAA level Bantam and Midget hockey players (n=672) between 12 and 17 years of age (mean – 15.0 years, SD = 1.2) enrolled in a large cohort study. All participants completed baseline tests including the Behavior Assessment System for Children. 2nd Edition (BASC2) and a pre-season medical questionnaire (PSQ) completed by parents that included a retrospective report of prior concussions and injuries. Players were assigned to 4 groups: no injury (NONE) , concussion (CO) and musculoskeletal (MSK) injuries or both (COMB) . Participants in the CO and COMB groups demonstrated significantly higher rates of

psychological difficulties compared with other groups {F(63,1800)=1.43,p=.016, partial *n2* and on select clinical scales measuring a typicality locus of control, anxiety, depression, sense of inadequacy , somatisation and attention. In addition, results from the composite clinical scales reached statistical significance for internalizing problems and emotional symptom index. Effect sizes were minimal with the exception of comparisons between the NONE and COMB groups where effect sizes were medium to large. Proportions above clinical cut-off scores set by the BASC 2 were higher for the COMB group compared with CO, MSK or NONE groups. Results suggested smaller percentage of youth may be more prone to psychological sequel following concussion.

Orooj M et al . (2016) reported that field hockey is considered as a popular sport worldwide next to soccer in popularity. According to National Collegiate Athlete Association overall injury rate is 6.3%/1000 athlete exposure. Mechanism of injury could be extrinsic injury that is, being struck by hockey stick or ball or intrinsic injury due to internal force acting on muscle or an overuse injury which includes tibial stress syndrome, shin soreness, illiotibial band pain, low back dysfunction, tendonitis, patello-femoral pain, planter fasciitis, and stress fracture of foot and leg. Initial approach to injured athlete includes airways, breathing, circulation, rest, ice, compression, elevation, referral protocol, normalize joint range of motion (ROM), restore strengthening, Improve proprioception, agility and balance, minimize chance of re injury by maintaining flexibility. Strengthening and therapeutic exercises that will vary accordingly to the injured part. Countermeasures include pre participation screening, preseason conditioning, fitness program, adequate warm and pregame stretch, followed by cool down and postgame stretch, following rules and penalty and finally by wearing protective equipment. This article discusses the biomechanics and common injuries in field hockey. Patho-mechanics, diagnosis,

and physiotherapy management of the common injures are outlined. This may help the health care practitioners who deals with different injuries related to hockey

Potteiger, J A et al. (2010) examined the relationships between laboratory tests and on-ice skating performance in division I men's hockey athletes. Twenty-one men (age 20.7 6 1.6 years) were assessed for body composition, isokinetic force production in the quadriceps and hamstring muscles, and anaerobic muscle power via the Wingate 30-second cycle ergometer test. Air displacement plethysmography was used to determine % body fat (%FAT), fat-free mass (FFM), and fat mass. Peak torque and total work during 10 maximal effort repetitions at 120□ □s21 were measured during concentric muscle actions using an isokinetic dynamometer. Muscle power was measured using a Monark cycle ergometer with resistance set at 7.5% of body mass. On-ice skating performance was measured during 6 timed 89-m sprints with subjects wearing full hockey equipment. First length skate (FLS) was 54 m, and total length skate (TLS) was 89 m with fastest and average skating times used in the analysis. Correlation coefficients were used to determine relationships between laboratory testing and on-ice performance. Subjects had a body mass of 88.8 6 7.8 kg and % FAT of 11.9 6 4.6. First length skate–Average and TLS-Average skating times were moderately correlated to %FAT ([r = 0.53; p = 0.013] and [r = 0.57; p = 0.007]) such that a greater %FAT was related to slower skating speeds. First length skate–Fastest was correlated to Wingate percent fatigue index (r = 20.48; p = 0.027) and FLS-Average was correlated to Wingate peak power per kilogram body mass (r = 20.43; p = 0.05). Laboratory testing of select variables can predict skating performance in ice hockey athletes. This information can be used to develop targeted and effective strength and conditioning programs that will improve on-ice skating speed.

Shelvam. P.V (2016) studied that specific training on dribbling performance among university hockey players. To achieve this purpose of the study, thirty men hockey players were selected as subjects who were from the various faculties, Annamalai University, Annamalainagar.

The selected subjects were aged between 19 to 24 years. They were divided into two equal groups of fifteen each, Group I underwent specific training and Group II acted as control that did not participate in any special training apart from their regular sports and games practices. The subjects were tested on selected criterion variables such as dribbling prior to any immediately after the training period. The selected criterion variable such as dribbling was measuring by w dribble test. The analysis of covariance (ANCOVA) was used to find out the significant differences if any, between the experimental group and control group on selected criterion variable. The 0.05 level of confidence was fixed to test the significance, which was considered as an appropriate. The result of the present study has revealed that there was a significant difference among the experimental and control group on dribbling performance.

Singh B et al (2015) conducted a study on 30 male players (fifteen male hockey players; age: 16.80 ± 1.52 years & fifteen male football players; age: 16.13 ± 0.83 years) comprising of inmates of Sports Training Centre, scheme of Sports Authority of India and players training under the guidance of Punjab State coaches in Patiala (India). The experimental protocol developed by Bosco et al., (1983) and Mcguigan et al., (2006) were used to measure the vertical jump performance of male hockey and football players. Test of significance of the differences was applied and data was judged at 0.01 and 0.05 level of significance. The analysis of data showed that the male hockey players performed better in vertical jump test parameters like the squat jump flight time, squat jump height, counter movement jump height, counter movement

flight time, Eccentric Utilization Ratio (EUR), Elasticity Index (EI) than the male football players. But male football players performed better in continuous vertical jump test (60sec) parameters like Peak Power (0-15sec), Peak Power (45-60sec) and Mean Power (0-60sec), as compared to male hockey players.

Taylor McFadden (2016) investigated the psychological effects of sport specialization by examining relationships between youth hockey players' level of specialization, psychological needs satisfaction (PNS), psychological needs dissatisfaction (PND), mental health and mental illness. Sixty-one youth male hockey players (M_{age} = 14.90) responded to an online survey. Results indicated that PND according to specialization was significant with early specializers reporting the highest PND and recreational athletes reporting the lowest PND (p = .029), indicating a large effect size (η^2 = .157). No other significant differences were found. Bivariate correlations revealed significant relationships between all variables. Moreover, regression analyses showed that PNS positively predicted mental health (β = .47) and negatively predicted mental illness (β = −.51), while PND positively predicted mental illness (β = .71) and negatively predicted mental health (β = −.44). Results suggest that PNS is important to promote mental health and avoid mental illness. Future research is needed to fully understand the psychological consequences of early sport specialization.

2.2 STUDIES RELATED TO PSYCHO-REGULATORY INTERVENTIONS

Antonis Hatzigeorgiadi (2004) examined the effect of instructional and motivational self-talk on the occurrence of interfering thoughts and performance on two water-polo tasks with similar characteristics performed in the same environment. Two experiments were conducted in the swimming pool, one involving a precision task (throwing a ball at target) and one involving a

power task (throwing a ball for distance). In the first experiment (precision task), both self-talk groups improved their performance in comparison to the baseline measure, with participants using instructional self-talk improving more. In the second experiment (power task), only the motivational self-talk group improved its performance significantly. In both experiments the occurrence of interfering thoughts declined for both groups.

The results of the study provided further support for the effectiveness of self-talk and give preliminary evidence regarding likely mechanisms through which self-talk influence performance, that is through indications that self-talk reduces thoughts not related to task execution, thus enhancing concentration to the task.

Aymeric (2008) reviewed the models of greatest conceptual viability, and aims at describing the fields in which MI may play a crucial role, by integrating these functions in a unique model within motor performance and recovery. The detailed description of the imagery-based interventions considers distinct outcomes: (i) motor learning and performance, (ii) motivation, self-confidence and anxiety, (iii) strategies and problem-solving, and (iv) injury rehabilitation. The Motor Imagery Integrative Model of Imagery in Sport (MIIMS) may be used as a global guiding framework in the field of MI studies to develop more effective imagery interventions by covering the major key components of MI training related to the outcome achieved by athletes.

Barbour S and Orlick T (1999) explored the mental skills used by professional ice hockey players and determined the extent to which Orlick Wheel of Excellence (1992, 1996) could be applied to these athletes. In-depth interviews were conducted with ten National Hockey League players who had collectively played over 4,500 NHL games, and scored 1,025 goals. The results indicated that Orlickís Wheel of Excellence elements (commitment, belief, full focus, positive

images, mental readiness, distraction control and constructive evaluation) were common to all elite athletes interviewed. The element of fun and enjoyment was also found to be significant for NHL players. The preservation of rich quotes offer valuable insights and strategies for excelling. A survey of the mental aspects of professional hockey was also completed by 27 NHL players to corroborate the relative importance of each of the mental skills identified in Orlick's model. Overall the results were consistent with other recent research into the mental aspects of high level performers.

Birrer, D (2010) reviewed Psychological Skills Training in elite sports, with a special focus on high-intensity sports (HIS). The reviewed literature showed a lack of convincing evidence and theoretical underpinning concerning traditional psychological skills to enhance performance in HIS. Therefore, a model with three conceptual levels (psychological demands, skills and techniques) is presented. The model facilitates the identification of the psychological demands of a specific sport, which in turn enables distinguishing which psychological skills are required. This allows an expert to choose psychological techniques to improve the athlete's psychological skill. Considerations based on our model and the limited HIS-related literature available revealed self-skills, personal development and life skills, arousal-regulation skills, volitional skills, motivational skills and recovery skills as the most important skills to address in order to enhance performance. Development of harmonious passion, in-practice integration of volitional strategies, use of associative attentional techniques, pain management techniques, use of the mindfulness-acceptance approach and the facilitative interpretation of cognitive and somatic sensations are regarded as suitable to meet the psychological demands of HIS.

Carlson (1993) reported that progressive muscle relaxation training (APRT-Abbreviated Progressive Relaxation Training) was used as an intervention for psycho-physiological and stress-related disorders. The strength of association between APRT and outcome measures was calculated for 29 experiments published after 1980. The average effect size across all experiments was moderate (r=.40). Moreover, for experiments that included a follow-up assessment, a similar effect size was noted at the 1st follow-up (r =.43). Additionally, experiments that used a prospective design (i.e., analyzed change) detected a stronger effect for APRT than those that used a cross-sectional design (i.e., compared groups). APRT was most strongly associated with improvement in experiments that delivered APRT on an individual basis and provided recipients with training tapes. Moreover, the treatment duration and number of sessions positively influenced the strength of association.

Chris Harwood (2004) investigated associations between achievement goal orientations and reported psychological skill use in sport. Five hundred seventy three elite young athletes completed the Perceptions of Success Questionnaire (POSQ; Roberts, Treasure, & Balague, 1998Roberts, G. C., Treasure, D. C. and Balague, G. 1998. Achievement goals in sport: The development and validation of the Perceptions of Success Questionnaire. Journal of Sport Sciences, 16: 337–347.[Taylor & Francis Online], [Web of Science ®], [Google Scholar]) and the Test of Performance Strategies (TOPS; Thomas, Murphy, & Hardy, 1999Thomas, P. R., Murphy, S. M. and Hardy, L.1999. Test of performance strategies: Development and preliminary validation of comprehensive measure of athletes' psychological skills. Journal of Sports Sciences, 17: 697–711.[Taylor & Francis Online], [Web of Science ®], [Google Scholar]). Cluster analysis revealed three distinct goal profile groups: Cluster 1—Higher-

task/Moderate-ego (n = 260); Cluster 2—Lower-task/Higher-ego (n = 120); and Cluster 3—Moderate-task/Lower-ego (n = 119). A MANOVA revealed a significant multivariate effect, Pillai's Trace = .11, F(16, 1076) = 3.75, p = .001, η^2 = .05, with post hoc tests determining that higher-task/moderate-ego athletes reported using significantly more Imagery, Goal setting, and positive Self-talk skills when compared with Lower-task/Higher-ego and/or Moderate-task/Lower-ego athletes. These findings are discussed with respect to the potential role that achievement goals play in the application and development of psychological skills in youth sport.

Claire Calmels (2004) examined the effectiveness of an imagery training program in improving national softball players' selective attention. A multiple-baseline design across individuals was used. There were four participants. One remained at baseline, while the other three spent 10 min a day practicing an audio-taped imagery program composed of 28 sessions. Measures of selective attention were collected via a baseball/softball batting specific version stemming from Nideffer's (1976) Test of Attentional and Interpersonal Style (TAIS). The results demonstrated that the imagery training program generally enhanced the ability of softball players to integrate external stimuli without being overloaded with them and to narrow attention. Results were discussed in relation to the usefulness of multiple-baseline designs for investigating individual differences among elite athletes. Practical pedagogical considerations for coaching are proposed.

Corina Schuster (2011) assessed the beneficial effect of motor imagery (MI) if combined with physical practice. An extended systematic literature search using 24 databases was performed for five disciplines: Education, Medicine, Music, Psychology and Sports. An MI intervention that focused on motor skills, performance or strength improvement were included. Information describing 17 MITS (Motor Imagery Training sessions) elements was extracted based on the

PETTLEP (physical, environment, timing, task, learning, emotion, perspective) approach. Seven elements describing the MITS temporal parameters were calculated: study duration, intervention duration, MITS duration, total MITS count, MITS per week, MI trials per MITS and total MI training time. Both independent reviewers found 96% congruity, which was tested on a random sample of 20% of all references. After selection, 133 studies reporting 141 MI interventions were included. The locations of the MITS and position of the participants during MI were task-specific. Participants received acoustic detailed MI instructions, which were mostly standardised and live. During MI practice, participants kept their eyes closed.

MI training was performed from an internal perspective with a kinesthetic mode. Changes in MI content, duration and dosage were reported in 31 MI interventions. Familiarisation sessions before the start of the MI intervention were mentioned in 17 reports. MI interventions focused with decreasing relevance on motor-, cognitive- and strength-focused tasks. Average study intervention lasted 34 days, with participants practicing MI on average three times per week for 17 minutes, with 34 MI trials. Average total MI time was 178 minutes including 13 MITS. Reporting rate varied between 25.5% and 95.5%. MITS elements of successful interventions were individual, supervised and non-directed sessions, added after physical practice.

Daftari (2010) examined the perceived positive and negative effects of self-talk on the athletes'performance. Data were collected through survey questionnaire from a group of Iranian elite football players qualified for national football team. The players' responses were thematically analyzed for both positive and negative effects of ST in different occasions around official football competitions. The analysis indicated the perceived effects could be characterized at two levels: mental and behavioral. Most important positive effects of ST at mental level

included its cognitive benefits such as enhancing focus and attention, promote decision making skills and decreasing reaction time. Mental level benefits also comprised emotional effects of ST such as motivating players to increase efforts, coping with difficult situations, and decreasing anxiety and psyching up. Emotional effects had negative aspects too. Weakening confidence by self criticism, and dwelling on negative thoughts and increased stress were among negative effects. At behavioral level, ST was perceived to benefit execution of tasks by increased attentional focus and creating an awareness of the negative consequences of certain behaviors thereby benefiting the overall performance of the individuals and that of the team.

Daniel Gould (2007) examined how outstanding high school football coaches developed life skills in their players. In-depth phone interviews were conducted with 10 outstanding coaches ranging in age from 47 to 68 years (M = 54). Coaches averaged 31 years of coaching experience, and were highly successful (76.6% winning percentage). Hierarchical content analysis of the data revealed that two general dimensions or categories of strategies emerged: (a) general coaching; and (b) player development strategies. Within the general coaching strategies dimension, higher-order themes focused on working with players and strategies for dealing with other parties. In the player development strategies general dimension was the higher-order theme set of teaching life skills. Results highlighted that it was clear these coaches did not view the coaching of life skills as separate from their general coaching strategies for performance enhancement and while highly motivated to win, personal development of their players was a top priority.

Dave Smith (2008) compared the effects of physical practice with PETTLEP-based (Physical, Environment, Task, Timing, Learning, Emotion and Perspective; Holmes & Collins, 2001) imagery and PETTLEP + physical practice interventions on golf bunker shot performance.

Thirty-two male county- or international-level golfers were assigned to one of four groups; PETTLEP imagery, physical practice, PETTLEP + physical practice, or control. The PETTLEP imagery group imaged 15 bunker shots, their interventions incorporating PETTLEP components, such as physical, environment, and emotion, twice a week. The physical practice group physically performed their 15 bunker shots twice per week; the PETTLEP + physical practice group performed PETTLEP imagery once per week and physical practice once per week. Each group performed their respective tasks for 6 weeks. Pre- and posttests consisted of 15 bunker shots, with points awarded according to the ball proximity to the pin. All groups improved significantly ($p < .01$) from pre- to posttest, and the PETTLEP + physical practice group improved more ($p < .05$) than the PETTLEP and physical practice groups. However, there was no significant difference between the physical practice and PETTLEP groups ($p > .05$). Findings, therefore, support the effectiveness of PETTLEP in enhancing golf performance, especially when combined with physical practice.

Dave Smith et al (2007) examined the effects of PETTLEP-based imagery compared to more traditional imagery interventions. PETTLEP imagery aimed to produce a realistic and more functionally equivalent imagery experience than traditional imagery methods through factors such as wearing the correct clothing or imaging in the correct environment. In Study 1, 48 varsity hockey players were divided into four groups: “Sport-specific” imagery, “clothing” imagery, “traditional” imagery, and control. Imagery participants imaged 10 penalty flicks daily for six weeks, and controls spent an equivalent time reading hockey literature. In the post-test, the sport-specific group scored significantly higher than the clothing group, who scored significantly higher than the traditional imagery group. In Study 2, 40 junior gymnasts attempted a turning jump on the beam. They were split into four groups: A physical practice group, a PETTLEP

imagery group, a stimulus only imagery group, and a control (stretching) group. Each group performed their task three times per week for six weeks. Both the physical practice and PETTLEP groups improved significantly from pre-test to post-test, with no significant difference between them, but the stimulus and control groups did not improve significantly. Taken together the results from Study 1 and 2 provided support for the efficacy of PETTLEP-based imagery over more traditional imagery interventions.

David Tod (2011) presented a systematic review of the literature examining the relationship between self-talk and performance. “Second-generation questions” regarding potential mediators and moderators of the self-talk–performance relationship were also examined.

A total of 47 studies were analyzed. Results indicated beneficial effects of positive, instructional, and motivational self-talk for performance. Somewhat surprisingly, two evidence-based challenges to popular current viewpoints on self-talk emerged. First, negative self-talk did not impede performance. Second, there was inconsistent evidence for the differential effects of instructional and motivational self-talk based on task characteristics. Results from the mediation-based analysis indicate that cognitive and behavioral factors had the most consistent relationships with self-talk.

Eloff (2011) determined student field hockey players' perceived need for Mental skills training (MST), and their perceptions regarding their ability to prepare psychologically for matches, as well as to compile a general profile of their psychological skills for the total group and by gender. A total of 197 (91 men and 106 women) South African field hockey players at tertiary institutions who participated in the University Sport of South Africa (USSA) tournament, took part in the study. The subjects completed two standardised sport psychological questionnaires

(the Psychological Skills Inventory (PSI) and the Ottawa Mental Skills Assessment Tool-3 (OMSAT-3). Descriptive statistics, *t*-tests and frequency analyses were calculated using SPSS for Windows (Version 3.1). The results from the PSI questionnaire showed poor values for skills such as goal directedness, activation control, maintaining self-confidence, concentration and imagery among the total group. Significant gender differences in which the male subjects performed better than the females were observed for concentration, achievement motivation and activation control. The highest mean scores on the OMSAT-3 were found for goal setting, self-confidence and commitment. Significant gender differences were observed for goal setting and commitment (in which the females performed better than the males), whilst the males fared better than the females in stress reaction. The participants in the study perceived MST as an important tool to enhance performance in field hockey. From these results, it can be recommended that sport psychologists and other role players in field hockey pay more attention to the development and implementation of MST programs

Eva A. Vadoa (1997) explored the relationship between imagery use, imagery ability, competitive anxiety and performance. Fifty-seven Junior North American Roller Skating Championship competitors completed the revised Movement Imagery Questionnaire (MIQ-R), the Sport Imagery Questionnaire (SIQ), and the Competitive State Anxiety Inventory—2 (CSAI-Results from stepwise multiple regression analyses revealed visual imagery ability and motivational arousal imagery to be predictors of cognitive state anxiety. Visual imagery ability also predicted somatic state anxiety. while motivational mastery imagery was a predictor of self-confidence. With respect to the relationship between imagery use and imagery ability, high imagery ability was associated with higher imagery use. Finally, self-confidence and kinesthetic imagery ability scores correctly classified a majority of the subjects as medalists versus non-

medalists. These results suggest that imagery can be used to help control competitive anxiety levels and enhance self-confidence.

George Mamassis (2004) reported the impact of a season-long Mental Training Program (MTP) on two elite junior tennis players. The two reported cases were part of a study in which MTP players (n = 5) in addition to their tennis practice were exposed to 5 different psychological skills: goal setting, positive thinking and self-talk, concentration and routines, arousal regulation techniques, and imagery. Another group of elite junior tennis players (n = 4) followed the same amount and quality of tennis practice, but received no mental training practice. Program effectiveness was evaluated through (a) the Competitive State Anxiety Inventory-2 (CSAI-2), (b) the athletes' appraisal on 8 aspects of tennis performance, and (c) tennis-specific statistical data of two selected cases. The results indicated an increase in the direction dimension of the somatic anxiety, cognitive anxiety and self-confidence for the intervention group at the posttest. Moreover, the intensity of self-confidence, as well as the overall tennis performance, were greater for all the participants of the intervention group after the MTP. Results on two selected cases are reported which clearly demonstrate the effectiveness of the MTP in eliminating specific performance problems.

Goodman (2014) emphasized controlling or reducing distress, mindfulness-based interventions teach tolerance and acceptance of negative thoughts, feelings, and emotions. In the present pilot study, an entire men’s Division I athletic team (n = 13) provided voluntary consent and participated in a brief mindfulness-based intervention. Over 5 weeks, the team attended eight 90-min group intervention sessions immediately followed by 1-hr Hatha yoga sessions. Complete analyses showed that following the intervention, participants reported greater mindfulness,

greater goal-directed energy, and less perceived stress than before the intervention. Compared with a nonrandomized control group (student athletes from various club sports; n = 13), intervention participants reported greater goal-directed energy and mindfulness.

Hatzigeorgiadis A (2011) presented a meta-analytic review of the effects of self-talk interventions on task performance in sport and possible factors that may moderate the effectiveness of self-talk. A total of 32 studies yielding 62 effect sizes were included in the final meta-analytic pool. The analysis revealed a positive moderate effect size (ES = .48). The moderator analyses showed that self-talk interventions were more effective for tasks involving relatively fine, compared with relatively gross, motor demands, and for novel, compared with well-learned, tasks. Instructional self-talk was more effective for fine tasks than was motivational self-talk; moreover, instructional self-talk was more effective for fine tasks rather than gross tasks. Finally, interventions including self-talk training were more effective than those not including self-talk training. The results of the study established the effectiveness of self-talk in sport, encourage the use of self-talk as a strategy to facilitate learning and enhance performance.

Heather J. Peters (2006) examined the negative and positive content of self-talk, the relationship of self-talk to performance, and persistence following positive and negative feedback were investigated across different cultural backgrounds (European Americans n = 54, East Asians n = 26). East Asians had a significantly larger proportion of negative to positive self-talk than European Americans, d = .62. The greater proportion of negative self-talk related to poorer performance for European Americans, but better performance for East Asians, r 2 = .13. European Americans' practice persistence increased after receiving positive versus negative feedback, d = .59. No differences occurred in persistence for East Asians, d = .06. Results

suggest sport psychology consultants and coaches should consider an athlete's cultural background when employing cognitive interventions and providing feedback.

James Hardy (2005) conducted two studies (a) to generate quantitative data on the content of athletes' self-talk and (b) to examine differences in the use of self-talk in general as well as the functions of self-talk in practice and competition settings. Differences in self-talk between the sexes, sport types and skill levels were also assessed. Athletes (n = 295, mean age = 21.9 years) from a variety of sports and competitive levels completed the Self-Talk Use Questionnaire (STUQ), which was developed specifically for the study. In Study 1, single-factor between-group multivariate analyses of variance revealed significant differences across sex and sport type for the content of self-talk. Mixed-model multivariate analyses of variance revealed overall greater use of self-talk, as well as increased use of the functions of self-talk, in competition compared with practice. Moreover, individual sport athletes reported greater use of self-talk, as well as the functions of self-talk, than their team sport counterparts. In Study 2, recreational volleyball players (n = 164, mean age = 21.5 years) completed a situationally modified STUQ. The results were very similar to those of Study 1.

That the content of athlete self-talk was generally positive, covert and abbreviated lends support to the application of Vygotsky's (1986 Vygotsky LS 1986 Thought and language (translated by A. Kozulin), Cambridge, verbal self-regulation theory to the study of self-talk in sport.

Jones (2002) examined the impact of an imagery script intervention on the levels of perceived stress, self efficacy and climbing performance of female participants. Novice climbers were randomly either assigned to a control group or to an imagery intervention group. Each participants attended four sessions , during which they practiced climbing techniques and took

part either in a light exercise program or a scripted imagery training program .The imagery script comprised both motivational general mastery and motivational general arousal types of imagery. During the testing sessions the participants climbed a 5.1 meter climbing wall following a designated route . Pre climb levels of self efficacy and perceived stress was measured. The experimental group reported significantly lower levels of perceived stress before and during the climb and higher levels of self efficacy in their ability to execute the correct technique during the climb . It is proved that imagery techniques has better training effect.

Khanjani M (2014) investigated the effect of psychological skill training techniques such as progressive muscle relaxation on competitive anxiety. The three sub-scales of competitive anxiety were also examined; cognitive anxiety, somatic anxiety and self-confidence.The study consisted of 24 female Karate players. Their mean age is about 21±3.8 years. The Competitive State Anxiety Inventory-2 (CSAI-2), also developed were used. Subjects were randomly assigned to either a relaxation training experimental group, or a no relaxation training control group. Both the experimental groups were given training for 3 days a week and for 6 weeks in total. Paired t-tests were used to test the effect of treatment groups individually between pre and post–tests of all the groups on variables used in the present study.

The findings of the study were tested in a semi-empirical and statistical models using t-test and using the statistical software in SPSS19 and evaluated $p \leq 0.05$. Karate players in the relaxation group showed a gradual relaxation of the training attended and have done compared with the control group in cognitive anxiety, somatic anxiety and self-confidence, have shown better performance

Kim D Dorsch (2012) examined the use of psychological skills by Canadian minor ice hockey officials. The Athlete Coping Skills Inventory (ACSI-28; Smith, Schutz, Smoll, & Ptacek, 1995) was modified for an officiating context by changing the original coachability subscale into one that reflected feedback from both supervisors and coaches. Responses from the resulting 35-item questionnaire were obtained from 255 ice hockey officials (91.4% male) from two Canadian provinces. Officials certified in Levels 1 through 4 were asked to indicate on a scale from 1 *Never* to 5 *Always* how often they acted or thought in a certain way. Officials in the higher levels as compared to the lower levels reported (a) using more goal setting strategies, $F(3, 229) = 4.28$, $p = .006$, (b) feeling more confident in their officiating abilities, $F(3, 230) = 5.02$, $p = .002$, (c) feeling better able to concentrate during games and able to handle unexpected situations better, $F(3, 229) = 4.41$, $p = .005$, (d) performing better under pressure, $F(3, 227) = 10.44$, $p = .000$, and (e) staying more positive and calm during games, $F(3, 228) = 2.69$, $p = .047$. Discussion will revolve around the implications for psychological skills training.

Kruger A (2010) attempted to determine the sport psychological skills that discriminate significantly between successful and less successful female university field hockey players in order to emphasize the characteristics that need to be addressed in sport psychological skills training (SPST) sessions. The subjects consisted of 106 female university hockey players, categorized into a successful (players from the A division) and less successful group (players from the B division). The sport psychological skill (SPS) levels measured with the Psychological Skill Inventory (PSI) and the Ottawa Mental Skills Assessment Tool-3 (OMSAT-3) from the two groups were compared and reported. The results indicated that the successful group had better results in 66.7% of the variables that were measured in the study. Practical significance was found in four of the 18 psychological variables that included achievement motivation, goal

directedness, goal-setting and fear control. Furthermore, six variables discriminate significantly between the successful and less successful female hockey players, which included achievement motivation, stress reactions, fear control, self-confidence, mental rehearsal as well as imagery.

Linnér L (2010) examined the effects of instructional and motivational self-talk on self-efficacy in elite golf players; and examined the effects of instructional and motivational self-talk on performance in elite golf players. Participants involved were 9 elite golf players with a mean age of 20.4 years (SD = ± 1.1). A repeated measure design was implemented, and the putting experiment was completed in three sessions. Multiple one-way repeated measure analyses of variance revealed no significant differences across tries regarding self-efficacy and that instructional self-talk significantly improved performance compared to the baseline measure. Qualitative content analysis of after experiment debriefings revealed that participants found the task challenging, thought their self-talk affected their performance, and had issues with the absence of a hole.

Lisa J. Rogerson (2002) examined the effectiveness of two mental skills on the performance of ice hockey goaltenders during league games. The mental skills utilized were relaxation, in the form of centering, and self-talk. The participants were five male junior A hockey goaltenders. A single-subject multiple baseline across individuals design was employed to evaluate the use of the mental skills.

The results demonstrated that the mental skills training was effective in producing improvements in the save percentage of the goaltenders. The social validation results indicated that the participants enjoyed using the mental skills and were satisfied with the results obtained. Furthermore, the coaches were very satisfied with the results and felt that the mental skills

training was an important ingredient for improving performance, in particular performance consistency.

Michael J. Mahoney (1977) analyzed about thirteen male gymnasts and were given a standard questionnaire and were interviewed during the final trials for the U.S. Olympic team. Particular attention was given to psychological factors and cognitive strategies in their training and competition. Using their final competitive grouping as the primary dependent variable, correlations were performed to assess the relationship between these factors and superior athletic performance. Data from this exploratory study suggested that varying patterns of cognition may be strongly correlated with successful and superior gymnastic performance. Specifically, dream frequency, self-verbalizations, and certain forms of mental imagery seemed to differentiate the best gymnasts from those who failed to make the Olympic team. These two groups also appeared to show different anxiety patterns and different methods of coping with competitive stress.

Michael J. Greenspan (1989) reported wherein sport psychologists utilized numerous interventions and techniques intended to enhance the performance of athletes in competition, the selection of those interventions has not always been based on research for which adequate validity has been established. In an attempt to provide sport psychologists with a working body of accurate knowledge and suggestions for future intervention research, an analysis and synthesis of research is presented that addresses the efficacy of different psychological interventions with athletes performing in competitive situations in the sport in which they regularly compete. From information reported in 19 published studies, covering 23 interventions, it was concluded that educational relaxation-based interventions and remedial cognitive restructuring interventions with individual athletes are, in general, effective.

Pérez-Encinas et al (2016) explored the types of interfering thoughts and the concomitant use of self-talk functions occurring in a sample of elite female field hockey players. The variation in these interferences in relation to athletes' performance level in competition was also investigated. Thirty-two female players of the first and the Under-21 National Team completed the Thought Occurrence Questionnaire for Sport and the Self-Talk Questionnaire after an international competition. The trainer rated the players' performance during competition in 3 different categories according to his expectancies based on the athletes' conditioning: Low (n = 6), Normal (n = 15), and High Performance (n = 11). Those players classified as low performing had increased the occurrence of irrelevant thoughts as compared with other groups. These athletes also showed the highest scores on the thoughts of escape subscale. Athletes with high performance during tournaments exhibited the lowest scores on all subscales, especially in thoughts of escape. The S-TQ subscales showed no differences among the 3 performance groups. Under-21 players had higher scores on the occurrence of performance worries and thoughts of escape subscales than first national team players. Interfering thoughts are common in female field hockey players during world-class competitions. The occurrence of irrelevant thoughts and thoughts of escape was related to players exhibiting low performance. The use of self-talk functions was relatively low in these athletes and could explain the enhanced occurrence of interfering thoughts.

Paul.M (1980) assessed thirty-six volunteer subjects who were assigned to one of three conditions: progressive relaxation, clinically standardized meditation, or a waiting list control group asked to relax daily (without specific instruction). Subjects were given paper and pencil tests two times, separated by 5 weeks during which time the two treatment groups received 4 weekly sessions of group training. All subjects were tested in the psychophysiology laboratory at

the end of the 5-week period, during which time they were exposed to 5 very loud tones. While relaxing as deeply as possible using the techniques they had learned and anticipating the loud tones, the meditation group exhibited higher heart rates and higher integrated frontalis EMG activity, but they also showed greater cardiac decelerations following each tone, more frontal alpha, and fewer symptoms of cognitive anxiety than the other two groups. The relaxation group reported more sensations of muscular relaxation than the other groups, but also some symptoms of hyperventilation.

Robert Grove J (1998) examined the field hockey players (n=39) and assessed their own psychological strengths and weaknesses by rank-ordering various mental skills. Coaches (n=5) who had daily contact with these athletes ranked the same skills on the basis of their perception of the players' strengths and weaknesses. Comparisons indicated that the specificity of the skills being ranked influenced the amount of agreement between the responses of players and coaches. When general categories of skills were ranked, there was very little consistency between the groups. When specific skills within the general categories were ranked, there was considerable consistency between the groups. The results are discussed in relation to the nature of the questions asked when designing mental training programs. It is suggested that consultants should take care to identify potential problems in terms of specific skills rather than general categories. By doing so, they may increase the likelihood of agreement about mental training needs and increase their effectiveness

Ryan A. Hamilton (2007) assessed the effectiveness of three different self-talk interventions on endurance performance. Participants were nine cyclists who performed a 20-minute cycling ergometer workout two times per week for five weeks. At each workout participants were

requested to cycle as far as possible. A multiple-baseline design was utilized, which after varying baseline lengths allowed for the implementation of one out of three self-talk interventions: self-regulated positive self-talk, assisted positive self-talk, and assisted negative self-talk. Results revealed a performance increase in all groups with the greatest increase being found in the assisted positive self-talk condition.

Sandra (2012) examined how successful hockey players use imagery and replicates and extends other imagery research by considering skill level (high school, college and professional). The key variables of interest were the frequency of imagery use, the perceived function of imagery, imagery direction, and confidence in using imagery. Results are presented from the subscale and individual item level as based on the Sport Imagery Questionnaire. Overall, MG-M imagery was used the most, and most images were considered to serve this function. Some images were debilitative - but they were not used very often. Athletes were confident in their ability to use imagery and in most cases confidence was positively correlated with imagery use.

Sanna M.Nordin (2006) examined the athletes (N = 150) from three competitive levels (recreational, intermediate, and elite) who completed an adapted version of the Sport Imagery Questionnaire .Each SIQ item was scored for frequency, deliberation, relevance, concentration, and enjoyment. Eight SIQ items were deemed to be deliberate practice: five cognitive-specific images, two cognitive-general images, and one motivational general-mastery image. Elite and intermediate athletes used imagery more frequently and deliberately and perceived imagery to be more relevant and requiring more concentration than recreational athletes.

Differences also existed regarding how deliberately the athletes engaged in various imagery types. The findings may inform applied practitioners regarding differences in imagery use between competitive levels and differences in the characteristics of imagery types.

Sheu (2003) examined the effect of progressive muscle relaxation (PMR) on blood pressure and psychosocial status in clients with essential hypertension. The study, which used a quasi-experimental design, recruited a convenience sample of 40 subjects from a hypertension outpatient clinic. Twenty subjects received PMR training once a week and practiced at home daily for 4 weeks. PMR training had an immediate effect, reducing pulse rate 2.35 beats/min, systolic blood pressure 5.44 mm Hg, and diastolic blood pressure 3.48 mm Hg. After 4 weeks of PMR training, further decreases in pulse rate (2.9 beats/min), systolic blood presurre (5.1 mm Hg), and diastolic blood pressure (3.1 mm Hg) occurred. PMR significantly lowered patients' perception of stress, and it enhanced their perception of health. PMR is beneficial for patients with essential hypertension, and nurses may use it to enhance their independent function as well as their quality of life.

Wolpe (1958) studied the imagery as a part in systematic desensitization. He initiated the study of relaxation combination with imagery. In work with athletes, many of the authors suggested using relaxation inductions prior to imagery instructions in order to facility ate the imagery control. Suinn's (VMBR) method in fact, requires beginning each imagery session with a relaxation induction.

2.3 STUDIES RELATED TO PSYCHOLOGICAL PARAMETERS

Acharya Jayashree (1984) conducted a study on the position wise analysis of cognitive worry, somatic tension and self-confidence of women hockey players. She had chosen 113 female

hockey players who participated in All India interuniversity hockey championship, 1992 (first eight teams) were divided into three categories according to their playing positions i.e. forwards (N-52) Midfielders (N-27) and defenders (N-34). They were tested for three components of competitive state anxiety cognitive worry, somatic tension and self confidence, a day before they were to play their fixtures. The analysis of variance computed from the data so collected on the three positions of player's has indicated that no significant difference was among them.

Besharat, M. (2011) examined moderating effects of self-confidence and sport self-efficacy on the relationship between competitive anxiety and sport performance in a sample of Iranian athletes. A total of 246 volunteer athletes (149 males, 97 females) were included in this study. All participants were asked to complete Multidimensional Competitive Anxiety Questionnaire and Sport Self-Efficacy Scale. To measure the athletes' sport performance, their coaches were asked to complete the Sport Achevement Scale. The results revealed that self-confidence and sport self-efficacy moderated the relationship between competitive anxiety and sport performance. Analysis of the data revealed that moderating effects of self-confidence for the association of cognitive and somatic dimensions of competitive anxiety with sport performance were partial. On the other hand, the moderating effects of sport self-efficacy for the association of cognitive and somatic dimensions of competitive anxiety with sport performance were full.

Kate Hays (2009) examined the role of confidence in relation to the cognitive, affective, and behavioural responses it elicits, and identified the factors responsible for debilitating confidence within the organizational subculture of world-class sport. An integrative model of sport confidence as a broad conceptual base, 14 athletes (7 males, 7 females) were interviewed in response to the research aims. Analysis indicated that high sport confidence facilitated

performance through its positive effect on athletes' thoughts, feelings, and behaviours. However, the athletes participating in this study were susceptible to factors that served to debilitate their confidence. These factors appeared to be associated with the sources from which they derived their confidence and influenced to some extent by gender. Thus, the focus of interventions designed to enhance sport confidence must reflect the individual needs of the athlete, and might involve identifying an athlete's sources and types of confidence, and ensuring that these are intact during competition preparation phases.

Khan M.K (2014) investigated that psychological variables have a significant influence on the performance of athletes. Self-confidence is one of the vital factor responsible for success of the most of the athletes. The present investigation was aimed to explore differences among three levels of the hockey players represented intervarsity inter-collegiate and inter-school levels. 300 hockey players (100 in each group) were recruited as potential subjects to explore differences on the dimension of self-confidence. ANOVA was employed for statistical treatment to the obtained data collected on Sports Self-Confidence Inventory developed by Kaul and Mittal (2003). Results revealed a significant difference among three groups of subjects wherein post-hoc test clearly revealed that university players had higher self-confidence as compared to school level hockey players and inter-collegiate level hockey players demonstrated greater self-confidence as compared to inter-school level hockey players.

Mehri Mowlaie (2011) examined mediation effects of self-confidence and sport self-efficacy on the relationship between dimensions of anger and anger control with sport performance in a sample of Iranian athletes. A total of 246 volunteer athletes (149 males, 97 females) were included in this study. All participants completed Tehran Multidimensional Anger Scale (TMAS) and Sport Self- Efficacy Scale (SSES). To measure the athletes' sport performance, their coaches

were asked to complete the Sport Achievement Scale (SAS).The results revealed that self-confidence and sport self- efficacy mediated the relationship between dimensions of anger and anger control with sport performance.

Skinner (2013) examined the relationship between confidence and performance throughout an entire competitive season. Two levels of confidence consistent to team sports were analyzed. Team and coach confidence were collected through the Collective Efficacy Questionnaire for Sport (CEQS) and Coaching Efficacy Scale (CES) respectively. Two teams, women's soccer and volleyball (n=48) from a college in the western United States, completed their specific questionnaires five times throughout the season. The CEQS measured collective efficacy (team confidence) and the CES measured coaching efficacy (coach confidence) for each team. Simple linear regressions were used to determine the relationship team confidence and coaching confidence had on the success of each team. Pearson's correlation coefficients were taken to determine if team and coach confidence were connected throughout the season. Volleyball was statistically significant for both team and coach confidence at $p = 0.033$ and $p = 0.040$ respectively, with a .68 correlation coefficient. Conversely, the soccer team was not statistically significant for both team and coach confidence at $p = 0.53$ and $p = 0.93$ for each. There was, however, a strong correlation coefficient at .89 for the two levels. The findings suggest that team and coach confidence may be related and associated with the success of the team. The results also hint, through the correlation coefficients, that team and coach confidence may be connected.

Dilip R. Patel et al. (2010) reported that the prevalence of anxiety disorders in adolescents range from 6% to 20%, and it is much higher for anxiety symptoms not meeting criteria for a specific anxiety disorder. The prevalence is much higher in females.athletes participating in

sports experience different levels of stress from competitive sports. For most young athletes (generally 13 to 24 years old, i.e., high-school and college age group) sport participation is reported to be no more stressful than many other activities of daily student or work life in general where competition is involved and performance is measured.

Some level of sport related performance anxiety is considered to be normal and healthy; however, extreme anxiety in athletes can be detrimental in these performance situations. A number of factors may contribute to the development, severity, and persistence of performance anxiety related to sport participation. This article reviews the definitions, theories, clinical presentation, evaluation, and management principles of performance anxiety symptoms in young athletes.

Gayen D & Roy S S (2014) compared anxiety, interest and sports achievement motivation between soccer and volleyball players. For the purpose of the study 30 (15 soccer and 15 volleyball) male players who represented their university in respective competitions were selected as the subjects of the study. Age of the selected subjects was ranged from 17 to 26 years. Anxiety, Interest and Sports achievement motivation of subjects were measured through standard questionnaire. Independent t-test was used to compare soccer and volleyball players on the selected psychological variables further the level of significance was set at 0.05. The results of the study revealed that there was insignificant difference existed between soccer and volleyball players in anxiety, interest and sports achievement motivation. The present study found that there has no difference between soccer and volleyball players in relation to anxiety, interest and sports achievement motivation.

Gian Mauro (2008) conducted a quantitative meta-analysis that enhances understanding of the variability and clinical significance of anxiety reduction outcomes after relaxation treatment. Studies (1997–2007) scheduled , both RCT, observational and without control group, evaluating the efficacy of relaxation training (Jacobson's progressive relaxation, autogenic training, applied relaxation and meditation) for anxiety problems and disorders were identified.

As hypothesized, relaxation training showed a medium-large effect size in the treatment of anxiety. Cohen's d was .57 (95% CI: .52 to .68) in the within analysis and .51 (95% CI: .46 to .634) in the between group analysis. Efficacy was higher for meditation, among volunteers and for longer treatments. The results show consistent and significant efficacy of relaxation training in reducing anxiety. This meta-analysis extends the existing literature through facilitation of a better understanding of the variability and clinical significance of anxiety improvement subsequent to relaxation training.

Graham Jones (1995) provided a critical overview of developments and issues in competitive anxiety research. The discussion was divided into sections dealing with general arousal-based approaches, general anxiety-based approaches and, finally, multidimensional anxiety-based approaches. The major emphasis was on multidimensional anxiety-based approaches, in which a number of factors and issues surrounding the competitive anxiety response are addressed, including: conceptual and measurement developments; antecedents of competitive anxiety; temporal patterning of the response; and frequency of competition-related cognitive intrusions. Research which has examined the relationship between multidimensional anxiety and performance is considered in detail, including debilitative and facilitative competitive anxiety

states and catastrophe models. A control model of debilitative and facilitative competitive anxiety is proposed.

Harry (1999) used a single-subject research design to test the effectiveness of a cognitive-behavioral intervention in reducing state anxiety and improving sport performance. The subject was a small-bore rifle shooter who suffered from high levels of competition-related anxiety. Initially, self-report, physiological, and behavioral measures of baseline state anxiety were obtained during competition. A 6-week intervention program was then implemented. This program included training in relaxation, thought stoppage, refocusing, coping statements, and biofeedback. An opportunity to practice using these procedures in competition was provided. Measures of state anxiety and performance were then obtained in a second competition. Results revealed that cognitive anxiety, somatic anxiety, gun vibration, and urinary catecholamines decreased whereas self-confidence and performance increased from baseline to treatment.

Humara, Miguel (1999) examined the relationship between anxiety and performance from a cognitive behavioral perspective. Previous research in the field has suggested that the majority of consultations conducted by sport psychologists are related to anxiety. Included is a discussion on the theoretical underpinnings of anxiety and how it relates to performance. Research conducted on the relationship between anxiety and performance is also discussed. A review of the cognitive-behavioral treatments that have been used for anxiety reduction and performance enhancement within the field of athletics is included. Suggestions for future research and practical considerations are listed in the conclusion.

Joel R. Grossbard (2009) used the age-appropriate Sport Anxiety Scale-2 (SAS-2; Smith, Smoll, Cumming, & Grossbard, 2006) to assess levels of cognitive and somatic anxiety among

male and female youth sport participants. Confirmatory factor analyses with a sample of 9–14 year old athletes (N=1038) supported the viability of a three-factor model of anxiety involving somatic anxiety, worry, and concentration disruption previously demonstrated in high school and college samples. Tests for factorial invariance revealed that the three-factor model was an equally good fit for 9–11 year olds and 12–14 year olds, and for both males and females. Gender and age were modestly related to anxiety scores.

Worry about performing poorly was highest in girls and in older athletes, whereas boys reported higher levels of concentration disruption in competitive sport situations.

Joseph Baker (2000) identified the relationship between athlete sport anxiety and various sport outcomes (e.g., performance and dropout). For the majority of athletes involved in sport, the coach is an influential element of the competitive experience. Two hundred and twenty-eight athletes from 15 sports, completed the Sport Anxiety Scale (SAS) and the Coaching Behavior Scale for Sport (CBS-S). The predictive ability of athletes' perceived frequency of seven coaching behaviors (Physical training, mental preparation, goal setting, technical skills, competition strategies, personal rapport and negative personal rapport) on four forms of sport anxiety (total anxiety, somatic anxiety, concentration disruption and worry) was examined. Results indicate that negative personal rapport was a significant predictor of all measured forms of sport anxiety while competition strategies was a significant predictor for total anxiety, concentration disruption, and worry. Other behaviors were not significant. The findings suggest that negative rapport between coach and athlete is an important contributor to athlete anxiety. In addition, behaviors that the coach demonstrates relative to competition can be influential in reducing athlete anxiety.

Krane V.R (1991) investigated the two innovative approaches concerning the relationship between anxiety and performance by comparing prediction based multi dimensional theory of anxiety and catastrophe theory. The multidimensional anxiety theory predicts cognitive and Somatic State Anxiety which differentially and independently relate to performance while catastrophe theory is a three dimensional model examining the joint effects of cognitive and Somatic State Anxiety. Results support the multidimensional anxiety theory prediction that Cognitive State Anxiety would be related to performance in a negative linear manner. Somatic anxiety also displayed a negative linear relationship to performance.

Richard Neil (2006) examined the intensity and direction of competitive anxiety symptoms and psychological skill usage in rugby union players of different skill levels. Elite (n=65) and non elite (n=50) participants completed measures of competitive anxiety, self- confidence, and psychological skills. The elite group reported more facilitative interpretations of competitive anxiety symptoms, higher levels of self-confidence, lower relaxation usage, and greater imagery and self-talk use than their non elite counterparts. The findings suggest that nonelite performers primarily use relaxation strategies to reduce anxiety intensity. In contrast, elite athletes appear to maintain intensity levels and adopt a combination of skills to interpret symptoms as facilitative to performance. Potential mechanisms for this process include the use of imagery and verbal persuasion efficacy-enhancement techniques to protect against debilitating symptom interpretations.

Ronald E. Smith (1995) assessed the efficacy of a social-support and stress-reduction program intended to influence factors that affect performance anxiety in child athletes. Baseball coaches in an experimental condition received preseason training in which behavioral guidelines for

reducing anxiety were presented and modeled. A no-treatment control group did not receive the coach training. Children (N = 152) who played for the two groups of coaches were interviewed and administered sport-specific trait anxiety scales pre- and postseason. A manipulation check demonstrated that trained coaches differed from controls in player-perceived behaviors in accordance with the goals of the intervention. They were also evaluated more positively by their players, their players reported having more fun, and their teams exhibited a higher level of attraction among players despite the fact that they did not differ from controls in won—lost records.

Vincent A. Parnabas and Yahaya Mahamood (2010) described and compare the anxiety differences before and during competition among different categories of skills of athletes and genders. Data were collected from 902 athletes using a 27 item Competitive State Anxiety Inventory-2. The results showed that national level and male athletes obtained the lowest score on competitive state anxiety. Based on the current results, it is recommended that sport psychologists, sport counselors, and coaches in Malaysia use the findings to design appropriate training program to help athletes acquire suitable coping strategies so as to reduce their state anxiety levels and enhance their performance.

Woodman Time and Lew Hardy (2003) investigated two relationships in competitive sport: (1) state cognitive anxiety with performance and (2) state self-confidence with performance. The cognitive anxiety mean effect size was r =70.10 (P50.05). The self-confidence mean effect size was r =0.24 (P 50.001). A paired-samples t-test revealed that the magnitude of the self-confidence mean effect size was significantly greater than that of the cognitive anxiety mean effect size. The moderator variables for the cognitive anxiety–performance relationship were sex

and standard of competition. The mean effect size for men (r = 70.22) was significantly greater than the mean effect size for women (r = 70.03). The mean effect size for high-standard competition (r= 70.27) was significantly greater than that for comparatively low-standard competition (r= 70.06). The significant moderator variables for the self-confidence–performance relationship were sex, standard of competition and measurement. The mean effect size for men (r = 0.29) was significantly greater than that for women (r = 0.04) and the mean effect size for high-standard competition (r = 0.33) was significantly greater than that for lowstandard competition (r= 0.16). The mean effect size derived from studies employing the Competitive State Anxiety Inventory-2 (r = 0.19) was significantly smaller than the mean effect size derived from studies using other measures of self-confidence (r = 0.38). Measurement issues are discussed and future research directions are offered in light of the results.

Amanda Visek (2005) examined male ice hockey players' (*N* = 85) perceived legitimacy of aggression and professionalization of attitudes across developmental age and competitive level. Findings were analyzed within the complementary conceptual frameworks of social learning theory, professionalization of attitudes, and moral reasoning. Ice hockey players completed a modified, sport-specific version of the Sport Behavior Inventory and a modified version of the Context Modified Webb scale. Results of the investigation revealed that as players increased in age and competitive level, perceived legitimacy of aggressive behavior increased, and their attitudes about sport became increasingly professionalized. Based on the conceptual framework in which the results are interpreted, intervention services by sport psychology practitioners are explored that are aimed at the athlete, the organization, and influential others.

Brad J. Bushman and Gary L. Wells (1978) examined the validity of measures of trait aggressiveness either have been retrospective studies or have used laboratory aggression as the criterion behavior. Can a measure of trait aggressiveness predict non laboratory physical aggression? The Physical Aggression subscale of the Aggression Questionnaire was completed by 91 high school hockey players prior to the start of the season. At the end of the season, these trait aggressiveness scores were regressed on minutes in the penalty box for aggressive penalties (e.g., fighting, slashing, tripping) and minutes in the penalty box for nonaggressive penalties (e.g., delay of game, illegal equipment, too many players).

As expected, preseason trait aggressiveness scores predicted aggressive penalty minutes ($r = .33$) but not nonaggressive penalty minutes ($r = .04$).

Cusimano (2016) conducted semi structured interview with 61 minor ice hockey participants, including male and female players, parents, coaches, trainers, managers and a game official. Players were aged 13–15 playing on competitive body checking teams or on non-body checking teams. Interviews were manually transcribed, coded and analyzed for themes relating to aggressive play in minor ice hockey. Parents, coaches, teammates and the media exert a large influence on player behavior. Aggressive behavior is often reinforced by the player's social environment and justified by players to demonstrate loyalty to teammates and especially injured teammates by seeking revenge particularly in competitive, body-checking leagues. Among female and male players in non-body checking organizations, aggressive play is not reinforced by the social environment. These findings are discussed within the framework of social identity theory and social learning theory, in order to understand players' need to seek revenge and how the social environment reinforces aggressive behaviors. This study provides a better

understanding of the players' motivations and environmental influences around aggressive and violent play which may be conducive to injury. The findings can be used to help design interventions aimed at reducing aggression and related injuries sustained during ice hockey and sports with similar cultures and rules.

Doroshenko (2013) examined the aggressive styles of play and attitudes have evolved into one of the most violent team sports. Fighting has been utilized as a marketing tool to increase viewership of hockey. The fights have increased in recent years, and there are many perceptions that portray its significance within the sport. The media markets physical aspects of the game, which reaches players of all ages and influences them to follow suit.

Social media websites, television shows, sport analysts, and movies have been created solely focusing on big hits, fights, and violent behaviors on the ice. Hockey fans enjoy spending extra money to watch a professional game hoping to see a fight. Crowds get louder and the magnitude of the arena escalates once a fight breaks out. Beginning at the youth level, coaches select players with size and physical advantages over others. Young athletes lacking physical attributes are encouraged to discontinue participation in sports like hockey. High school and college coaches recruit players with physical ability. The engagement in fighting is the highest at its most intense level, the National Hockey League, where certain players are tabbed with reputations based on their size and violent behavior. There are countless studies focusing on how external factors influence hockey players to fight. The purpose of this current study is to investigate how hockey players themselves perceive fighting within the game. Breaking it down further, this study will decipher any differences in perceptions of fighting between forwards and

defensemen. The results have emerged from Division I college hockey players in the North East Region.

Gee (2007) examined the mediating role of an athlete's birthplace (e.g., North America, Europe) on the use of aggressive behavior in professional ice hockey. In doing so, the study attempted to uncover whether or not the use of aggressive behavior in professional ice hockey is better understood according to within-competition determinants (e.g., score differential) or should be explored in the future using broader social factors (e.g., cultural socialization). The study was archival in nature and utilized the penalty records from the first 200 games of the 2003–2004 NHL regular season. A total of 2185 penalties were recorded and categorized according to Widmeyer and Birch's. The results indicated that North American players committed significantly more aggressive, and non-aggressive, acts than did their European counterparts. However, the distribution of both group's aggressive acts were relatively similar when examined according to the determinants under investigation (e.g., score differential). Subsequent analyses revealed that no significant performance differences existed between the two groups, indicating that either style of play is conducive to success in the NHL. These results appear to refute the commonly held notion that aggressive behavior is a natural by-product of the frustration inherent within hockey, and also that such behaviors facilitate performance. Rather, these behaviors may be better explained as learned responses that are modeled and reinforced differently for each athlete. Moreover, that these early learning experiences play an important role in shaping the future behavioral repertoires of these athletes, and are therefore deserving of future attention.

Loughead (2001) examined minor hockey league coaches' and players 'perceptions of the prevalence of aggression and the aggressive behavior of the players. More specifically, there

were three main purposes in the present study. The first purpose was to examine the relationship between level of play and aggression. The second purpose was to examine the relationship between minor hockey league coaches' and players' perceptions of instrumental and hostile aggression, and the observed aggression on the ice. The final purpose was to explore the relationship between instrumental and hostile aggression for coaches, players, and observed aggression. Hockey players at the Atom (i.e., 10 to 11 yrs.), Peewee (i.e., 12 to 13 yrs.), and Bantam (i.e., 14 to 15 yrs.) levels and their coaches completed a modified version of the Bredemeier Athletic Aggression Inventory-Short Form (BAAGI-S). Observed aggression was operationally defined through penalties recorded on game sheets. Players on Atom teams wer e more approving of instrumental aggression, while Peewee/Bantam players favored the use of hostile aggression and received more hostile aggression penalties. On the other hand, both Atom and Peewee/Bantam coaches endorsed instrumental aggression more than hostile aggression. Regardless of the level of play, players' views were unrelated to coaches' views on aggression. In addition, players viewed instrumental aggression as more acceptable, but showed a tendency to behave otherwise as reflected in more hostile-type penalties being observed.

John and Bryan (1978) investigated the relationship between aggression and athletic performance using an archival approach on the records of a college hockey team over an eight year period; high aggressive and low aggressive groups were defined. Aggression was defined on the basis of certain types of norm violation which distinguished aggressive acts more clearly than former research studies by separating instrumental aggression from hostile aggression. The results showed a significant relationship between aggression and successful performance, as

measured 'by goals and assists. It was speculated that the present study could become the basis for systematic and programmatic research on aggression and other variables.

John F (2010) replicated a former one showing a relationship between aggression and performance among hockey players. With certain penalties used as a measure of aggression, two groups of male college ice hockey players were compared for differences in goals and assists. Those rated high in aggression scored significantly more goals than those low in aggression. The direction of differences in assists was the same but did not reach significance. When the same groups were compared for shots on goals, significant differences were found, favoring the high aggressive group. This finding was discussed in light of energy output and efficiency. Attempts to relate performance and personality measures were not successful when comparisons on a self-report measure of anger were analyzed.

Widmeyer (2010) investigated Aggression-performance relationships for 32 professional hockey teams at various times during 1176 games over four seasons. The correlation between aggression and performance was non significant regardless of the segment of the season.

A significant positive relationship (r = .48) was found between aggression committed in the first period and overall performance. It was concluded that, provided it takes place early in a contest, aggression is an effective strategy for success in ice hockey. The evidence implied but did not statistically support the conclusion that aggression is also employed by hockey teams as a reaction to failure.

2.4 STUDIES RELATED TO PERFORMANCE PARAMETERS

Alison Hoens (1990) conducted a study using a Kin-Corn dynamometer which was used to evaluate trunk extensor and flexor strength in 11 elite female field hockey players. Average torques during maximal concentric and eccentric muscle actions through a range of movement from 25° of extension to 30° of flexion were measured at angular velocities of $30°.s^{-1}$ and $60°.s^{-1}$. Strength curve shape, average torque values and derived eccentric/concentric and trunk extensor/flexor ratios were analysed. The strength curves displayed greatest torques in the lengthened position for both muscle groups. Statistical analysis revealed no significant difference in strength between first and second test occasions (p=0.9920). Muscle action (eccentric versus concentric) and group (extensors versus flexors) were significant main effects (p <0.0001). There was no significant difference between torques at $30°.s^{-1}$ and $60°.s^{-1}$. The trunk extensor/flexor ratio approximated 1.75 for eccentric muscle action and 1.82 for concentric muscle actions. Gravity correction did not affect strength data but did affect strength curve shape. The results can be utilised to design individual prophylactic exercise programs for back pain.

Andrew D Curro (2017) determined relationship existence between off-ice and on-ice performance measures for sprint, power, and agility tests in male and female Division III ice hockey players. 51 Division III ice hockey players (M=32; F=19) performed five performance measures for sprint, agility, and power performance (2 sprints; 2 agility; 1 power). The performance measures were the 20 and 40 yard sprints, M test, Pro-Agility, and the Wingate test. Fastest times were recorded for the 20 and 40 yard sprint tests, and the average time of two trials in each direction was recorded for the M test and Pro-Agility. Wingate peak powerwas recorded. There was a significant relationship between the 20y, 40y and M test in males (r=0.54, 0.62, and

0.56, respectively) on and off-ice. When using off-ice performance measures for speed and agility, male performance measures were transferrable from off-ice performance to on-ice performance in straight ahead speed measures and agility measures that do not require a hard stop. The lack of a relationship between off and on-ice performance measures in females is not clearly understood and may be related to differences in skating age, and body composition between male and female ice hockey players.

Azmi K and Kusnanik N W ( ) analyzed the effect of speed, agility and quickness training program to increase in speed, agility and acceleration. This study was conducted at 26 soccer players and divided into 2 groups with 13 players each group. Group 1 was given SAQ training program, and Group 2 conventional training program for 8 weeks. This study used a quantitative approach with quasi-experimental method. The design of this study used a matching-only design. Data was collected by testing 30-meter sprint (speed), agility t-test (agility), and run 10 meters (acceleration) during the pretest and posttest. Furthermore, the data was analyzed using paired sample t-test and independent t-test. The results showed that there was a significant effect of speed, agility and quickness training program in improving in speed, agility and acceleration. In summary, it can be concluded that the speed, agility and quickness training program can improve the speed, agility and acceleration of the soccer players

Barr M J, Nolte V W (2014) examined the relationship between maximal squat strength (1 repetition maximum {RM}) and DJ performance in 15 female rugby playrs (n=15). The subjects were tested for 1RM, counter movement jump, squat jump, and DJ from 0.24 , 0.36,0.48, 0.60, 0.72 and 0.84 m. Jump height (JH) was calculated for all jumps nd relative peak eccentric force, relative peak concentric force, ground contact time (GCT) and reactive strength

index were also calculated for DJs. Pearson correlations were used to examine the relationship between 1RM relative to beody mass (BM) (1RM/BM) and JHs, reactive strength index and GCT during DJs. The subjects were placed in a high strength (HS) or low strength (LS) group depending on whether or not their 1RM/BM was >1 or <1. The t-tests and 2 way analysis of variance (ANOVA) were used to compare the groups. A Fishers post hoc test was used for the ANOVA with significance set at p , 0.05. A large correlation between JH and 1 RM/BM w shown at the 0.84 –m dropping height (r=0.560. A significant overall difference was found between the HS and LS groups for DJ JH with a post hoc analysis revealing a significant difference at the 0.84 –m drop height (p=0.029). It is likely beneficial for female athletes to achieve high levels of maximal leg strength if they are going to use high (.0.8-m) drop heights when performing DJs.

Cincia Benvenuti (2010) attempted to assess 1) the reliability of a reactive visual stimuli agility field test (RVS-T); and 2) to evaluate differences in RVS-T and planned (PVS-T) agility performances between female soccer and futsal players. Sixty-six female players belonging to Italian teams of regional level were recruited to the study. The experimental apparatus consisted of four lighted spherical visual stimuli connected to a computer able to randomly generate three different sequences. Differences between RVS-T and PVS-T performances were calculated to evaluate the decision-making time (DMT) of players.

Results. The intraclass reliability coefficient for RVS-T was 0.80. Significant (P ,0.05) differences merged only for RVS –T (futsal, 17.3+/- 0.5s; soccer, 18.8+/- 1.1s) and DMT (futsal, 2.6+/- 0. S; soccer, 4.1+/-1.2s) whereas similar performances between groups resulted for PVS-T (futsal 14.7+/-0.6s; soccer, 14.6+/-0.6s) It was concluded that the RVS-T proved to be a

reliable tool to evaluate agility in field conditions. Futsal players showed better RVS-T and DMT performances with respect to soccer counterparts, probably due to the higher velocity of actions and faster decision-making of their sport. The lack of differences in PVS-T performance confirms the importance to evaluate agility capabilities of players in both planned and reactive conditions.

Darren et al (2015) conducted a systematic review to (1) evaluate the reliability and validity of agility tests in team sports, (2) detail factors that may influence agility performance, and (3) identify the effects of different interventions on agility performance that influence agility performance as well as appropriate testing protocols and training strategies to assess and improve this quality. the methodological quality of intervention studies using a customized checklist of assessment criteria were used. Results indicated that Intra-class correlation co-efficient values were 0.80–0.91, 0.10–0.81, and 0.81–0.99 for test time using light, video, and human stimuli. A low-level reliability was reported for youth athletes using the video stimulus (0.10–0.30). Higher-level participants were shown to be, on average, 7.5 % faster than their lower level counterparts. Reaction time and accuracy, foot placement, and in-line lunge movement have been shown to be related to agility performance. The contribution of strength remains unclear. Efficacy of interventions on agility performance ranged from 1 % (vibration training) to 7.5 % (small-sided games training). It was concluded that Agility tests generally offer good reliability, although this may be compromised in younger participants responding to various scenarios. A human and/or video stimulus seems the most appropriate method to discriminate between standard of playing ability. Decision-making and perceptual factors are often propositioned as discriminant factors; however, the underlying mechanisms are relatively unknown. Research has focused predominantly on the physical element of agility. Small-sided

games and video training may offer effective methods of improving agility, although practical issues may hinder the latter.

Drake et al. (2017) assessed the inter-rater reliability of a field based 1v1 agility test encompassing perceptual-action performance. A secondary aim was to assess the relationship between the 1v1 agility tests with a range of physical performance tests including a commonly used Y step test. The third aim was to contrast the physical performance of high performing players against lower performing players in terms of agility action performance. Twenty-eight male rugby union players volunteered (age 19.3 ± 2.2 years, age range 18-24, body mass 96.5 ± 13.3 kg). Participants were randomly assigned to attack or defensive roles within a simulated rugby evasion task (1v1 agility test). Previously utilized performance scoring (1) was modified to assess agility performance. Two independent investigators reviewed video recordings to score attacking and defensive performance. Cohens Kappa statistics showed inter-rater reliability of agility scoring to be almost perfect, 861 (CI 0.816 to 0.917). Attacking agility had a large significant relationship with Y step performance ($r = -0.577$, $p = 0.001$), single leg repeat hop height ($r = 0.570$, $p = 0.002$) and body mass ($r = -0.537$, $p = 0.003$). Defensive agility outcome had a large significant relationship with CMJ flight time-contraction time ratio ($r = 0.580$, $p = 0.001$) and CMJ concentric duration ($r = -0.656$, $p = 0.000$). The Y step test shares 33% of common variance with 1v1 attacking and 5% with defensive agility performance likely due to significantly greater frontal and transverse plane movement during agility compared to the change of direction tests. It was recommended that the 1v1 agility test be included as part of physical profiling of team sports players.

Horicka P et al. (2014) reported the relationship between speed factors and agility in sport games. It dealt with the issue of various understanding of the term „agility“, mainly within the

context of team sport games. Under this term complex psychomotor abilities are understood. Their development requires a high degree of neuro-muscular specificity. The development of these abilities are underpinned also by perceptual components including also anticipation and decision-making processes. Authors point to the importance of agility in sport games. They stress the fact that the speed of movement is only one of the components of the complex motor ability called agility. Based on the theoretical analysis authors carried out measurements of basic factors of speed abilities and agility in 14-17-year-old basketball, volleyball and soccer players (n=56). The results showed that no statistical differences were observed in the level of agility tested by Fitro agility test (basketball - p=0.189; volleyball - p=0.949; soccer - p=0.832). Spearmann rank correlation test showed that no significant correlation (p=0.786; p > 0.05) was found between the results of Fitro agility test and Illinois test measuring speed abilities. The results suggest that agility is not simply one of speed abilities. Besides simple reaction speed, acceleration, deceleration accompanied by the change of direction of movement it comprises also perceptual components determined by complex reaction to unexpected, changeable stimuli occurring during a sport game.

Liu Yosheng (2016) determined if there is a link between agility and injuries in hockey, to create a screening tool for athletes Agility and its characteristics play an important role concerning non-contact injuries in field hockey athletes. Study design: prospective cohort study; level of evidence. 50 amateur field hockey players from four teams performed a T-test and L-run. The T-test was adjusted with the use of a reactive component in order to implement a cognitive factor to the test. Based on 13 qualitative and quantitative parameters a score was assigned to each athlete. Athletes were followed for a period of 7 months. The correlation between these parameters and their link with injury was measured. Results: 25 athletes sustained

a relevant non-contact injury. Two parameters tended to be eligible to apply in a logistic regression model. The mean time on the T-test appeared to be a significant predictor (Coef. = 0.70552; P = 0.1258) concerning injuries during the follow-up period. The predictive value of this model can be slightly augmented if a general impression on the L-run is taken into consideration (Coef. = 0.98034; P = 0.1451). The AUC of the ROC-curve marginally rises from 0,706 (mean time T-run) to 0,726 (mean time T-run + general impression L-run). Addition of a reactive component in the T-test did not alter the predicting value for injuries during the period of follow-up (P= 0,0433). It was concluded that the use of mean time on a T-test to measure an athlete's agility skills may be a useful screening tool to indicate potential future injuries. Notwithstanding the time on this test could be indicative for susceptible athletes, it is not predictive for inciting injury events. A merger with a general impression on the L-run could slightly augment the indicative value regarding injury. Nonetheless, further research regarding agility and its link with injury is necessary.

Mehmet K et al (2012) developed a novel test to measure run, shuttle run and directional change agility, and soccer shots on goal with decision making and to compare it with other agility tests. Multiple comparisons and assessments were conducted, including test-retest, Illinois, Zig-Zag, 30 m, Bosco, T-drill agility, and Wingate peak power tests. A total of 113 Turkish amateur and professional soccer players and tertiary-level students participated in the study. Test-retest and inter-tester reliability testing measures were conducted with athletes.

The correlation coefficient of the new test was .88, with no significant difference ($p > 0.01 > 0.01$) between the test results obtained in the first and second test sessions. The results of an analysis of variance revealed a significant ($p < 0.01$) difference between the T-drill agility and power test

results for soccer players. The new agility and skill test is an acceptable and reliable test when considering test-retest reliability and inter-rater reliability. The findings in this study suggest that the novel soccer-specific agility and shooting test can be utilized in the testing and identification of soccer play

Michael J (2005) determined the relationship between specific performance measures and hockey skating speed. Thirty competitive secondary school and junior hockey players were timed for skating speed. Off-ice measures included a 40-yd (36.9-m) sprint, concentric squat jump, drop jump, 1 repetition maximum leg press, flexibility, and balance ratio (wobble board test). Pearson product moment correlations were used to quantify the relationships between the variables. Electromyographic (EMG) activity of the dominant vastus lateralis and biceps femoris was monitored in 12 of the players while skating, stopping, turning, and performing a change-of-direction drill. Significant correlations (p , 0.005) were found between skating performance and the sprint and balance tests. Further analysis demonstrated significant correlations between balance and players under the age of 19 years (r 5 20.65) but not those over 19 years old (r 5 20.28). The significant correlations with balance suggested that stability may be associated with skating speed in younger players. The low correlations with drop jumps suggested that short contact time stretch-shortening activities (i.e., low amplitude plyometrics) may not be an important factor. Electromyographic activities illustrated the very high activation levels associated with maximum skating speed.

Miller et al. (2006) determined if six weeks of plyometric training can improve an athlete's agility. Subjects were divided into two groups, a plyometric training and a control group. The plyometric training group performed in a six week plyometric training program and the control

group did not perform any plyometric training techniques. All subjects participated in two agility tests: T-test and Illinois Agility Test, and a force plate test for ground reaction times both pre and post testing. Univariate ANCOVAs were conducted to analyze the change scores (post – pre) in the independent variables by group (training or control) with pre scores as covariates. The Univariate ANCOVA revealed a significant group effect $F_{2,26} = 25.42$, $p=0.0000$ for the T-test agility measure. For the Illinois Agility test, a significant group effect $F_{2,26} = 27.24$, $p = 0.000$ was also found. The plyometric training group had quicker posttest times compared to the control group for the agility tests. A significant group effect $F_{2,26} = 7.81$, $p = 0.002$ was found for the Force Plate test. The plyometric training group reduced time on the ground on the posttest compared to the control group. The results of this study show that plyometric training can be an effective training technique to improve an athlete's agility

Ozmen Tarik et al. (2014) investigated the effect of explosive strength training on speed and agility performance in wheelchair basketball players. Ten male wheelchair basketball players (Mage=31±4 yrs) were divided into two groups [i.e. explosive strength training (ES); control (CN)] based on International Wheelchair Basketball Federation (IWBF) classification scores. The ES group underwent 6-weeks of training, twice weekly, at 50% 1RM, 10-12 repetitions and 3-4 sets in addition to routine training. Effects of training were measured by the 20 m sprint test and Illinois agility test. Results indicated that the ES group, showed significantly higher increases in speed and agility performance ($p \leq .05$). It was concluded that a short-duration (i.e. 6-week) explosive strength training program in wheelchair basketball athletes results in significant improvements in sprint and agility performance

Spori G et al (2010) determined the effects of agility training (training of acceleration, deceleration and quick change of the direction of movement) on athletic power performance. Eighty healthy male college students (age 19±1.1 years; body mass 77.2±7.1 kg; body height 180.1±7.1 cm; body fat percentage 10.8±1.6) participated in this study. The study was a randomized controlled trial. The subjects were assigned randomly to an experimental group (EG; n=40) and control group (CG; n=40). Statistically significant differences were determined within the experimental group both in the initial and in the final measurement ($p<05$). Changes in muscle power were assessed through jumping height in a counter movement jump (CMJ). The experiment group significantly($p<05$) improved in the jumping height in CMJ (43.17 vs 44.01 cm) counter movement jump from the left leg (CMKIL) (29.66 vs 30.12 cm) and countermovement jump from the right leg (CMJIR) (28.77 vs29.11 cm). The values achieved by the subjects from the experimental group ranged from low values for the standing long jump (SLJ), to moderate values for the counter movement jump (CMJ) to high values for the 5m print (SP5). To enhance explosive muscle power and dynamic athletic performance, complex agility training can be used. Therefore, in addition to the well known training methods such as resistance training and plyometric training, strength and conditioning professionals may efficiently incorporate agility training into an overall conditioning program of athletes striving to achieve a high level of explosive leg power and dynamic athletic performance.

Thakur, Deepmala (2014) studied the relation between flexibility and agility in children and adolescent athlete. A correlational study was done on 50 athletes between the age group of 8-14 years who were recruited from RLS ground Belgaum, Karnataka. Hamstring, hip adductors and shoulder flexibility was assessed using inch tape and for agility, T- test was done using cones and stop watch. The results of the study demonstrated that there is no correlation between

flexibility and agility. Findings showed no correlation between flexibility and agility in the samples. An accurate comparison of this study to other studies is difficult due to lack of published literature related to the present study.

Warren B (2001) determined if straight sprint training transferred to agility performance tests that involved various change-of-direction complexities and if agility training transferred to straight sprinting speed. Thirty-six males were tested on a 30-m straight sprint and 6 agility tests with 2–5 changes of direction at various angles. The subjects participated in 2 training sessions per week for 6 weeks using 20–40-m straight sprints (speed) or 20–40-m change-of-direction sprints (3–5 changes of 1008) (agility). After the training period, the subjects were retested, and the speed training resulted in significant improvements (p , 0.05) in straight sprinting speed but limited gains in the agility tests. Generally, the more complex the agility task, the less the transfer from the speed training to the agility task. Conversely, the agility training resulted in significant improvements in the change-of-direction tests (p , 0.05) but no significant improvement (p . 0.05) in straight sprint performance. It was concluded that straight speed and agility training methods are specific and produce limited transfer to the other. These findings have implications for the design of speed and agility training and testing protocols.

Webster, Emily T (2004) reported that measures of strength and power were taken during a pre-season training segment in division I men's ice hockey as well as two weeks post-season in order to determine the changes that occurred in a twenty-one week season of play. All subjects performed a concurrent resistance training protocol that aimed to develop power, strength, and minimize the risk for potential injury that led to missed game-playing time. The men's ice hockey athletes were practicing an average of four days a week with the sport coaches in

addition to the resistance training sessions with the primary strength and conditioning coach. The mean values for front squat maximum, bench press maximum, maximum vertical jump, and maximum broad jump all decreased significantly over the course of the season, as evidenced by the post-season performance testing measures. The mean body mass measure for the team did not decrease as anticipated over the course of the twenty-one week in-season, and a small increase was seen in the subjects. The decrease in measures of strength and power despite resistance training efforts may be due to the physically grueling nature of men's ice hockey and the increase in volume of hockey-related activity during the in-season segment. Body mass maintenance was due to diligent efforts by sports performance staff to see to it that each individual player had a sound nutritional plan.

2.5 STUDIES RELATED TO YOGA

Anand et al. (2017) investigated whether Pranayama can be developed as an economical intervention to improve physical and mental health parameters among university level sportspersons in Indian setup. One hundred eight adult volunteers of university-level sportspersons of both gender were included the study. Their age ranged between 17 to 28 years. The selected subjects were divided into two groups, experimental- and control- with fifty-four (54) subjects in each group. The Anuloma-viloma Pranayama & Bhastrika Pranayama training period for experimental groups was of twelve weeks. Muscular Endurance, Flexibility, Pulse rate, Respiratory rate, Lung Capacity, Weight, Height, Mental Health were taken as physical health parameters. The mental health was tested with the Mental Health Inventory Questionnaire. Control groups did not undergo Pranayama. Results indicated that the experimental group showed significant improvement in most of the physical and mental health parameters

after twelve weeks of Pranayama practice on regular basis. The control group showed no significant improvement in these variables. It was concluded that Anuloma-Viloma and Bhastrika Pranayama appear to be economical, less time-consuming and easily learnable interventions that could be used as a planned intervention to improve physical and mental health parameters among the sportspersons of university-level.

Aparna and Gerald (2017) made an effort to find out the effect of asana on psychological variables of Women College players of Hockey and Basket ball. For this, achievement players were randomly assigned into two groups; one experimental and the other, control group. Each game consisted of 100 players, and were further divided into 50 each for experimental and control group. Experimental group practiced yoga asanas for a period of six weeks along with routine training programme. While control group was not given any intervention, they performed their routine training under the interaction of their coach. The intervention program was continued for a period of six weeks and included three sessions per week of 60 -90 minutes duration. The subject tested following standardized tests and procedures on the selected psychological variables before and after the training period. The Howard Dolman apparatus perception test was taken for the measurement of perception test, and to find out level of anxiety SCAT test was used. The analysis of data shows that yogic asanas were effective in developing perception and overcoming player's psychological and skill variables and also there were significant changes in the anxiety in the basketball and Hockey experimental group when compared to the control group. Health, physical fitness and emotional stability are the objectives which bring yoga and physical education on a common platform for the benefit of the human race.

Felix Arockia and Kirubakar (2015) investigated the effect of combined conventional training and yogic practices on selected physical variables among hockey players. It was hypothesized that there would be significant differences on selected physical variables due to the effect of combined conventional training and yogic practices among hockey players. For the study 30 male hockey players from Guru Nanak College, Chennai, Tamilnadu were selected at random and their age ranged from 18 to 25 years. For the study pre test – post test random group design which consists of control group and experimental group was used. The subjects were randomly assigned to two equal groups of fifteen each and named as Group 'A' and Group 'B'. Group 'A' underwent combined conventional training and yogic practices and Group 'B' have not underwent any training. The data was collected before and after twelve weeks of training. The data was analyzed by applying Analysis of Co-Variance (ANCOVA) technique. The level of significance was set at 0.05. The combined conventional training and yogic practices had positive impact on speed and agility among hockey players.

Jayaratnam B R (2013) assessed 60 players and concluded that twelve weeks yogic exercises significantly altered motivation and stress of the inter university hockey players. It was concluded that six weeks autogenic exercises significantly altered motivation and stress of the inter university hockey players. It was concluded that there was no significant differences between yogic exercises and autogenic training groups on motivation and stress of the interuniversity hockey players. Compare to previous work motivation is saved of 99% stress is saved of 3 % .

Malipatil Rajkumar and Patil S (2015) assessed the effect of yogic and physical exercises on leg explosive strength and agility, for this purpose hundred fifty students studying in various

classes of Government high school Nagathan of Vijayapaur in Karnataka state in age group of 14-16 years were selected. They were divided into three equal groups, each group consist of fifty subjects, in which group-I underwent yoga practices, group-II underwent physical exercises and group –III acted as control group who were not allowed to participated and receive any special treatment apart from their regular curriculum classes Â, the training period for this study was six days a week for twelve weeks, the before and after the training period, the subjects were tested for leg explosive strength and agility ability. The analysis of covariance (ANCOVA) was applied to find out which group has better in performance, whenever âFÈ ratio for adjusted test was found to be significant for adjusted post-test means ScheffeÂs test was followed, as a post hoc to determine which of the paired means differ significantly. It was drawn conclusions that after the training of yoga and physical exercise both training has improved leg explosive strength and agility, significant increases found in explosive strength among the physical exercise group comparing their counterpart and agility has ability has been increased in the physical exercises comparing to yoga group.

Kaur, P.J. and Bar (2009) determined the effects of selected asanas in hatha yoga on agility and flexibility level. The subjects for the study were selected on the basis of random group design. Thirty (N=30) male students were selected as subject for the present study from D.A.V. Institute of Engineering and Technology, Jalandhar (Punjab), INDIA. All the subjects ranged between the chronological age of 18-25 years. The selected subjects were further divided into two groups. Experimental treatment was then assigned to group “A” while group “B” acts as control. “Hexagonal Obstacle Test” was used to measure Agility whereas “Sit and Reach Test” was used to measure Flexibility. The subjects were subjected to the six week yogasanas training programme that includes Swastikasana, Mayurasana, Matsyendrasana, Paschimottanasana and

Gomukhasana. The difference in the mean of each group for selected variable was tested for the significance of difference by "t" test. The level of significance was set at 0.05. The results have shown the significant improvement in flexibility, since cal. t (= 8.122) > tab t .05 (14) (= 2.145). The treatment of six week yogasanas training program also shown significant improvement in case of agility, since cal. t (= 7.376) > tab t .05 (14) (= 2.145).

Tripathi, R.C (2015) designed to assess the effect of yogic exercises on the psychological wellbeing of college students. A self-made psychological wellbeing scale was used to examine the participant's psychological wellbeing, by using pre and post test design. In order to examine effects of yogic exercises on psychological wellbeing, a training program was introduced by yoga expert. The data was analyzed by using descriptive statistics as well as paired sample t test, by using SPSS v.16 software. Results found beneficial effects of yogic exercises on the psychological wellbeing of college students.

Polsgrove Jay (2016) determined 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 suggested 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.

Singh Tarsem, Kumar S (2015) investigated the effect of yoga training on muscular strength, muscular endurance, flexibility and agility of female hockey players. For this purpose, a sample of forty (N=40) female hockey players of age ranging from 18 to 25 years were selected from different colleges affiliated to Guru Nanak Dev University Amritsar. Further, the subjects were purposively divided in two groups. First group, designated as experimental group (N 1 =20) and the second one as control group (N 2 =20). All the participants were informed about the objectives and methodology of this study and they volunteered to participate in this experimental study. The study was restricted to the variables: muscular strength, muscular endurance, flexibility and agility. The same were measured by using Flexed Arms Hang Test, Sit-Ups Test, Sit and Reach Test and Shuttle Run Test respectively. Experimental group have undergone yoga training for 8-week by following a sequence of selected yogic asanas i.e. Matsyendrasana and Hanumanasan. Paired sample t-test was applied to study the effects of yoga training on female hockey players. The level of significance was set at 0.05. Results revealed significant differences between pre and post-tests of experimental group in respect to Muscular strength (t-6.946*),

Muscular endurance (t-9.863*), Flexibility (t-11.052*) and Agility (t-14.068*). However, insignificant differences were observed between pre and post-tests of control group.

An Overview

The reviews collected from various previous researchers reveal the importance of training at a complete level and brings in the importance of both physical and psychological parameters. The detailed study acts as an instrument to facilitate the researcher to hunt the research gap better and follow the problem to bring an effective strategy of various psychological techniques among hockey players. This chapter stands as an ornamental piece for the complete study throughout. Research reviews acts as a catalyst to support the present research and find out the actual problem and also to find out the impact of any form of intervention program and its concluding results.