Review of Related Literature

Stergioulas et al. (2007) studied amateur basketball injuries. A prospective study among male and female athletes. The purpose of this study was to record injuries in amateur males and females basketball players. These players participated in a domestic championship in Athens, during the 2000-2001 basketball seasons. An injury is considered the problem in musculoskeletal system that did not allow the player to continue the game or the training and might be out of the field for at least one day. Every injury was recorded by the coach of the team. From the start of the period until the end of the year 110 injuries in males and 86 in females were recorded. The rate was 0.72 injuries per male athlete per year, while for females the corresponding rate was 0.56. Males had more overuse injuries than females (p < 0.02), while females had more injuries in the lumbar spine. Ligament of (p < 0.05), while females had more sprains in the anterior cruciate ligament (p < 0.005). Both sexes sustained injuries during the games and in the second part. It is concluded that injuries in Greek amateur basketball players did not differ considerably from published studies. Further studies are needed in order that such injuries should be prevented.

Meir et al. (2010) studied a retrospective analysis of major and significant injuries and their consequences reported by retired Australian baseball players. The purpose of this study was to establish if injuries sustained during a player’s career in baseball had consequences later in life following retirement from participation. Seventy-five retired Australian baseball players (mean age 55.8 ± 11.4 years) completed a survey to establish the long-term consequences of major (i.e. those resulting in five or more consecutive weeks of training or playing being missed) and serious (i.e. those resulting in more than one week, but less than five weeks of training or playing being missed) injuries sustained during their playing careers. Players typically retire from participation in competitive baseball because of either age (33%), a combination of age and
injury (25.3%) or injury (14.7%). The average overall injury rate during a playing career was 5.6 ±7.1. Respondents reported a total of 98(26.4% of all injuries) “major” injuries (1.5 ±2.2 per respondent/playing career) and 273 (73.6%) “Significant” injuries (4.1 ±6.5 per respondent/playing career). The highest number of injuries related to the upper body (n = 145) representing. 59.9% of all injuries reported and 40.1% (n = 97) of injuries occurred to the lower body. Some respondents (29.3%) Incurred additional medical costs and significant loss of income (12%) associated with their injuries. 5.3% of all respondents indicated their injuries had impacted on their ability to perform work for which they had been previously trained. A further 26.7% reported experiencing limitations in their ability to carry out normal leisure activities later in life. Further research is needed into the mechanisms and management of common injuries and their consequences after retirement with a view to developing strategies that may reduce their incidence/severity and possible negative impact later.

Stuart et al. (2002) Studied Injuries in Youth Football: A Prospective Observational Cohort Analysis Among Players Aged 9 to 13 Years the purpose of this study is to determine the risk of injury in youth football games. Nine hundred fifteen players aged 9 to 13 years on 42 teams participated, including 10 teams in each grade from grades 4 through 6 and 6 teams each in grades 7 and 8. The study was conducted in the fall of 1997. Injury incidence, prevalence, and severity were calculated for each grade level and player position. Additional analyses examined the number of injuries according to body weight. A total of 55 injuries occurred in games during the entire season (overall prevalence, 5.97%). Most injuries were mild, and the most common type was contusion, which occurred in 33 players (60%). Four injuries (7%) were severe enough to prevent players from participating for the rest of the season. All 4 severe injuries were fractures involving the ankle physic. The risk of injury increased as players matured in age and
grade level. Injury risk for an eighth grade player was 4 times greater than the risk of injury to a fourth-grade player. A trend was identified for heavier players to be at increased risk, but no significant correlation was evident between body weight and injury. Our prospective observational analysis showed that most youth football injuries are mild. Older and heavier players appear to be at higher risk.

Hatami et al. (2011) Studied the Survey of Prevalence of Sport Injuries in Student Athletes of Islamic Azad University. The aim of this study was to investigate the incidence and prevalence of sports injuries causes in elite athlete's region 11 of Islamic Azad university students. For this purpose, data collection questionnaires were distributed among all students participating in the regional championship of region 11. In this study, 250 student athletes completed questionnaires in interviews and collected data collaboration and were selected as statistical samples. Method of data collection was using questionnaires, interviews and direct observation and collected data were analyzed using descriptive statistics. The results showed that total 250 subjects suffered some form injuries (73.65 percent), among those injuries that has occurred in the various activities (training and competitions), the highest injuries (76 percent) related to muscle damage and the lowest rate (3 percent) related to bone damage. Also 46.3 percent of injuries related to upper organs and 42.3 percent injuries related to lower limbs and 11.4 percent related to the trunk and spine. Among sport majors, the highest injuries related to karate (34 percent) and the lowest related to table tennis (1.6 percent). The results showed that the highest percent of injuries in this research occurred compared to the same other studies. The main causes of injuries in this study may be consisted of; opponent's contacts, lack of attention to safety tips -not good fitness and lack of proper facilities. Therefore, these findings proved that students must consider causes of injuries more than ever.
Bradley et al. (2008) Studied Incidence and Variance of Knee Injuries in Elite College Football Players the purpose of this study Knee injuries are among the most common musculoskeletal injuries in US football players. The literature includes little information about the role of player position and risk for knee injury. We hypothesized that the incidence of knee injury in elite collegiate US football players is high and that type of injury varies by player position. We evaluated 332 elite collegiate US football players at the 2005 National Football League Combine. All players underwent radiographic examinations, including plain x-rays and/or magnetic resonance imaging when necessary. All knee pathologic conditions and surgical procedures were recorded. Data were analyzed by player position to detect any trends. Fifty-four percent (179) of the 332 players had a history of knee injury; knee injuries totaled 233 (1.3/player injured). Eighty-six players (25.9%) had a total of 114 surgeries. The most common injuries were medial collateral ligament injury (n = 79), maniacal injury (n = 51), and anterior circulate ligament (ACL) injury (n = 40). The most common surgeries were arthroscopic meniscectomy (n = 39), ACL reconstruction (n = 35), and arthroscopic maniacal repair (n = 13). A history of knee injury was most common in defensive linemen (68% of players), tight ends (57%), and offensive linemen (57%). Knee surgery was more commonly performed on running backs (36%) and linebackers (34%). There were no significant associations between type or frequency of specific injuries with regard to player position. Knee injuries are common injuries in elite collegiate Football players and one fourth of these players undergo surgical procedures. However, there were no statistically significant differences in type or frequency of injuries by player position.
Kroner et al. (2012) Studied badminton injuries the purpose of this study in a one year period, from 1 January 1986 to 31 December 1986, 4303 patients with sports injuries were treated at Aarhus Amtssygehus and Aarhus Kommune, hospital. The mean age was 21.6 years (range 7-72 years) and 2830 were men. Two hundred and seventeen badminton injuries occurred in 208 patients (136 men) with a mean age of 29.6 years (range 7-57 years), constituting 4.1 percent of all sport injuries in Aarhus. Joints and ligaments were injured in 58.5 percent of the patients, most frequently located in the lower limb and significantly more often among patients younger than 30 years of age. Mused injury occurred in 19.8 percent of the patients. This type of injury was significantly more frequent among patients older than 30 years of age. Most injuries were minor. However, 6.8 percent of the patients were hospitalized and 30.9 percent received additional treatment by a physician. As the risk of injury varies with age, attempts to plan training individually and to institute prophylactic measures should be made.

Shariff et al. (2009) Studied Musculoskeletal injuries among Malaysian badminton players The purpose of this study was to investigate the pattern of musculoskeletal injuries sustained by Malaysian badminton players. This is a retrospective case notes review of all badminton players who attended the National Sports Institute (NSI) Clinic, Kuala Lumpur, Malaysia, and were diagnosed with musculoskeletal injuries. In a two and a half year period, from January 2005 to June 2007, 469 musculoskeletal injuries were diagnosed among badminton players at the NSI Clinic. The mean age of the players who attended the clinic was 19.2 (range 13–52) years. Approximately 60 percent of the injuries occurred in players younger than 20 years of age. The majority of injuries (91.5 percent) was categorized as mild overuse injury and mostly involved the knee. The majority of the injuries sustained by badminton players in this study were due to overuse, primarily in the knee. The majority of the injuries were diagnosed in
younger players and occurred during training/practice sessions. There was no difference in terms of incidence and types of injuries between the genders.

Sen (2004) Studied injury profiles of Indian female kabaddi players the purpose of this study kabaddi is the most popular contact, speedy, exhaustive, intermittent outdoor game played almost in all rural and urban schools and colleges. The study was conducted to measure the injuries sustained by female Indian kabaddi player, during the 2001-2002 seasons. A self-completion questionnaire survey was administered. Out of 231 questionnaires 212 were returned (92% completion rate). The questionnaire was composed of a few questions related to playing experience, location of play, use of protective equipments, injuries etc. concussion (32%) and distortion (28%) were the predominant nature of injury sustained. Upper extremities (51%) were more valuable than lower extremities (46%). Among all body parts, knees (19%) were more injury-prone followed by ankles (14%). Regarding etiology, contact with the opponents (57%) caused maximum injuries followed by contact with uneven ground (15%). The playing surface (causing 29% of all injuries) was also observed to be a noteworthy risk factor. The idea of immediate treatment following the injury was neglected. In 71% of cases, the injured players were able to resume training and playing within 1-2 weeks of the injury. Attention to factors such as the use of protective equipment, more scientific coaching to overcome problems like an unfavorable playing surface, maintenance of physique, as well as giving importance to immediate treatment of any injury would reduce the incidence of injury problems.

Brophy et al. (2010) Studied Gender influences: the role of leg dominance in ACL Injury among soccer players the purpose of this study intends to look at the role of leg dominance in anterior circulates ligament (ACL) injury risk among soccer (football) athletes. The purpose of this study was to test the hypothesis that soccer players rupture the ACL of their preferred
support leg more frequently than the ACL in their preferred kicking leg, particularly in non-contact injuries, despite differences in gender. Retrospective observational study. Outpatient orthopedic practice. Subjects who had sustained an ACL injury due to direct participation in soccer. N=93 (41 male, 52 female). These noncontact injuries were sustained while playing soccer. For non-contact injuries, roughly half of the injuries occurred in the preferred kicking leg (30) and the contra lateral leg (28). However, by gender, there was a significant difference in the distribution of non-contact injury, as 74.1% of males (20/27) were injured on the dominant kicking leg compared with 32% (10/31) of females (p<0.002). When limited to a non-contact injury mechanism, females are more likely to injure the ACL in their supporting leg, whereas males tend to injure their kicking leg. This research suggests that limb dominance does serve as an etiological factor with regard to ACL injuries sustained while playing soccer. If follow-up studies confirm that females are more likely to injure their preferred supporting leg, future research should investigate the cause for this discrepancy, which could result from underlying gender-based anatomical differences as well as differences in neuromuscular patterns during cutting maneuvers or kicking.

Kotsiopoulos & Dimitrios (2010) Studied injuries in basketball the purpose of this study Ninety players of 8 teams in 2 male team basketballs senior divisions were observed prospectively for 1 season to study the injury incidence in relation to exposure in games and practices. Forty-six injuries were recorded. Injury incidence was evaluated at 2.5 injuries per 1000 player-hours, with a significantly higher incidence in game injuries (14.3 injuries per 1000 game-hours) compared with practice injuries (0.6 injuries per 1000 practice-hours). Practice injury incidence was higher in the lower performance level group, and game injury incidence was higher in the high-level group. The upper extremity was involved in 37% of the injuries, and
the lower extremity in 54%. The knee was the most commonly injured joint, followed by the finger, ankle, and shoulder. Knee injuries were the most severe injuries, and they were more frequent in high-level players. There was an increase in the severity of injury with respect to performance level. The injury mechanism revealed a high number of offensive injuries, one-third of them occurring during a counterattack. The injury pattern showed certain variations with respect to player position and performance level.

Bailey et al. (2009) Studied Incidence of injuries among male soccer players in the first team of the University of the Free State in the Coca Cola League – 2007/2008 season the purpose of this study is to determine the incidence, nature and severity of injuries among male soccer players in the first soccer team of the University of the Free State (UFS) in the Coca Cola League during the 2007/2008 season. Informed consent was obtained from the players and the study was approved by the Ethics Committee of the Faculty of Health Sciences, UFS. A cohort descriptive study was conducted. Twenty-three league matches were attended, during which injury information was recorded on game sheets. The injury type and site, the player game time, and the game period during which the injury occurred were recorded. Follow-up questionnaires were completed for injured players. In 23 matches played, a total of 15 injuries were sustained by 10 players. The incidence of injuries per 1 000 hours Game time was 39.5. More injuries occurred at the beginning of the season. Midfield players were most often injured (53%). Most injuries were minor (class 1 severity), and none exceeded class 3 severity. Most injuries occurred in the first or fourth quarter of the game. Knee and ankle injuries were the most common (27% and 47%, respectively), consisting mainly of sprains sustained while being tackled. The most common soccer injuries incurred were to the lower extremity. The relatively low impact nature of the sport. Resulted in mild to moderate injuries. The incidence of injuries decreased as the
season progressed. The results of this study were Consistent with those of similar studies reporting the incidence of soccer injuries.

Ribera & Pena (2006) Studied epidemiologic analysis of injuries occurred during the 15th Brazilian Indoor Soccer (Fusel)Sub20 Team selection championship the purpose of this study was to analyze the incidence, circumstances, and characteristics of injuries recorded in the indoor soccer during the 15th Brazilian Sub20 Fusel Championship. Physiotherapists and doctors of every team selection participating in the 15th Brazilian Sub20 Fusel Championship answered a questionnaire with the purpose to investigate the occurrence of injuries during the games. The answering rate was 100%. 32 total injuries were recorded along 23 games, with a 1.39 injury incidence per game, or 208.6 injuries per 1,000/game. Approximately 1 to 3 injuries per game resulted in removal of players from gaming or training. Contact injuries were predominant in 65.62% (21 out of 32 injuries), and most of these injuries did not result in removal of the players. The present study observed that the injury incidence during the 15th Brazilian Sub20 Fusel Championship was similar to the incidence during the Indoor Soccer tournaments, but higher than those found in the outdoor soccer tournaments, characterizing the specificity of the sports. Nevertheless, circumstances and characteristics are similar among them, mainly due to the similar demand of the sports.

Verma & Lathi (2010) Studied injury occurrence to elite level women volleyball players the purpose of the present study was to sketch out the injury prevalence among university level female volleyball players. Their age ranged from 17 to 24 years. Mean, Standard Deviation and Percentages were utilized to identify the location, nature, injury sustained season, causes of injuries, etc to female players. A Questionnaires prepared by Cromwell.
Jadhav et al. (2010) Studied A Survey of Injuries Prevalence in Varsity Volleyball Players The primary objectives of the study was to quality the injuries of varsity volleyball players and to determine the nature, location, causes, outcome of injuries and the possible risk factors involved. Information on injuries was collected through a questionnaire from members of twelve Indian varsity teams participating in all India Inter Varsity tournament held in Dr. Babasaheb Ambedkar Marathwada University, Aurangabad Maharashtra in December 2007. The age range of the players was 18 to 25 years. 58% of players were in the age range of 22 to 25 years. The volleyball players were asked to recall injuries over the preceding one year period. A total of 121 out of 144 volleyball players sustained injuries. One hundred seventy eight injuries were recorded of which 36% injuries were of recurrent nature. Lower limb injuries were found to be predominant; the ankle and knee being the most commonly injured anatomical location. Most injuries involved soft tissue and related to the muscle and tendon. Most common circumstances giving rise to injuries were spiking (33.70%), blocking (24.15%), diving (17.41%) and setting (11.23%). It was further observed that volleyball players directly involved in attack or defense were found to be more susceptible to injury. Muscle injuries were observed to be the most common type. Spiking is the most common cause of injuries. The results of the research provide a useful insight into the nature, incidence and sites of injuries in varsity level volleyball players.

Asking et al. (2003) Studied hamstring injury occurrence in elite soccer players after preseason strength training with eccentric overload the purpose of this study was to evaluate whether a preseason strength training programme for the hamstring muscle group – emphasizing eccentric overloading – could affect the occurrence and severity of hamstring injuries during the subsequent competition season in elite male soccer players. Thirty players from two of the best premier-league division teams in Sweden were divided into two groups; one group received
additional specific hamstring training, whereas the other did not. The extra training was performed 1-2 times a week for 10 weeks by using a special device aiming at specific eccentric overloading of the hamstrings. Isokinetic hamstring strength and maximal running speed were measured in both groups before and after the training period and all hamstring injuries were registered during the total observational period of 10 month. The result showed that the occurrence of hamstring strain injuries was clearly lower in the training group (3/15) than in the control group (10/15). In addition, there were significant increases in strength and speed in the training group; however, there were no obvious coupling between performance parameters and injury occurrence. These results indicate that addition of specific preseason strength training for the hamstrings—including eccentric overloading—would be beneficial for elite soccer players, both from injury prevention and from performance enhancement point of view.

Louw et al. (2003) Studied knee injury patterns among young basketball players in Cape Town. The purpose of this study was to ascertain the current knee injury prevalence among young basketball players in Cape Town. A retrospective survey was conducted in 2000 to capture information on injuries sustained during the season. 458 young competitive basketball players in Cape Town, including 122 club players and 336 school basketball players, participated in the study. General injury was reported in 40.6% of players. The knee joint was the most common injury, representing 32% (n=304) of all injury reported. The probability sustaining a knee injury was significantly higher than sustaining any other injury (or 1.31, 95% CL 1.15-1.50). School players were less likely to sustain a knee injury than the club player (or 0.62, 95%CL 0.42-0.93). Most of the knee injuries (48.6%) were sustain during competitions. No significant difference in knee injuries was found between boys and girls (or 1.19, CL 0.13-1.95). The most common overall injury mechanism among both boys and girls was landing badly from
a jump (37.5%, n=144). Injuries resulting in loss of five or more player opportunities, i.e. practice or competition, were regarded as more serious injury and represented 14.5% of all knee injuries. The knee injury rate among young basketball players in Cape Town is high. Better awareness of the epidemiology might improve coaches, parents and health professionals understanding and management of knee injuries among young basketball players.

Koh et al. (2001) studied the injuries frequency, event, method, and serious injuries in Taekwondo and compares the injuries of ladies and gents taekwondo players. For this research new method was chosen. In this research complete data was collected from 14th world taekwondo championship held in 1999. In this research 53 players of 66 countries were studies. No difference was observed in total injuries as per gender. The difference was seen in the lower part of body. The conclusion of the research shows that, the injuries in taekwondo are depending upon method and technique by which the effect on competition can be created. Also the injuries in this sport can be control by equipment of this sport and rules and regulations of taekwondo.

Horodyski et al. (1998) Studied main contribution in the injuries happening in football to adolescents players. The survey of injuries on college level football indicates that the percentage of injuries is more in pre-summer duration. The objective of 3 yrs research was to study the flow of injuries in school level and college level remains same or not. During snowfall season 102237 player were observed injured and during pre-summer season 24550 players were observed to be injured. Specially the injuries observed in pre-summer season were on the upper part of body in which the special difference was seen in scratch and fracture.
Hopper et al. (1995) studied the evaluation of injuries, treatment, seriousness, and there as on of injuries and participation in netball competition co-relation. During 1985-1989 in west Australia approximately 11228 netball players participated in important netball competition in 4 week. From the above players 608 players get treatment in primary treatment centre. The percentage of injuries was 5.4% in the players whose performance was extraordinary. 84% players were observed with ankle injuries in which 67% player get cramp in the ligament of back side of foot. Also extra 10% players were observed by ankle injuries. The fracture of ankle or legs were also observed, some injuries measures about 8.3% knee joint. The percentage of danger of injuries in netball players was 0.054 per player per match was observed. This means netball is more safe compare to other sport.

Lars et al. (1995) Studied during the year 1986 the injuries of 5222 players were registered in to accident section of areas and Denmark of all sports. The injuries in volleyball player were also considered. The number of injured volleyball players was 278 players which was 5.3% of the total injuries and was on fourth place in sports. The period of recovery and the effect of injury were studied after 3 yrs of injury with the help of evaluation of questionnaire. The cramp in hand, ankle, and finger were continuously. It is also observed that, the injuries specially in the finger of hand in women player was more than men players. The men players were get injured in ankle and legs. 6% injuries on knees and 21% injuries of ankle were responsible to keep the players from volleyball. Some injuries were commonly happening or old. The objective of this research work was to restrict injuries which happen specially while blocking and over-hand pass. Also to reduce the percentage of injuries of ankle, hand, and fingers.
Floyed (1934) studied the possibility of injuries in gents. Ankle & knee injuries are more in.

Floyed (1962) states that more injuries happen to legs and hands in team sports and the sports in which player are playing man to man. Confidently it can be said that, the injuries below the part of hands and leg are, commonly happen in baseball, basketball, football and sports player on ground, but the injuries happened in the upper part of hands and legs are seen in wrestlers.

(Huston 1964) Axel observed that, more injuries are seen in the specific part of body i.e. ear in wrestler.