

Chapter II

REVIEW OF RELATED LITERATURE

This chapter describes the source of review of related literature. The researcher finds out some of the review of literature which could be very supportive and strengthen this study. After going through the available literature, the investigator presented some of the observations and findings of the experts in this area.

The essential aspect of a research is the review of the related literature. In the word of Good, “The key to the vast store house of published literature may open the doors to sources of significant problems and explanatory hypothesis, and provide helpful orientation for definition of the problem, background for selection of procedure, and comparative data for interpretation of results. In order to be truly creative and original, one must read extensively and critically as stimulus thinking.

For any research project to occupy a place in the development of a discipline, the researcher must be thoroughly familiar with both previous theory and research. The literature related to any problems helps the scholar to discover already known, which would enable the investigator to have a deep insight, clear prospective and a better understanding of a chosen problem. And various factors connected to the study. So a number of books, journals, and websites were referred. In the following pages, an attempt has been made to present briefly a few of the important researchers and studies conducted abroad and in India, as they have significant bearing on the present study.

The literature in any field forms the foundation upon which all future work will be built. If we fail to build upon the foundation of knowledge provided by the review of literature, the researcher might miss some works already done on the same topic. The reviews of the literature have been classified under the following headings.

1. Studies on Physical Fitness Characteristics of Basketball and Handball Players
2. Studies on personality Traits in Sport.

2.1 STUDIES ON PHYSICAL FITNESS CHARACTERISTICS OF BASKETBALL AND HANDBALL PLAYERS

Hoare, D. G. (2000) measured anthropometric and physiological attributes of 125 male and 123 female junior basketball players competing at the Australian under 16 championships in 1998. In addition, experienced coaches rated the performance of players during the championships. Performance profiles were compared across playing positions and by playing performance ('Best versus Rest'). Differences in anthropometric characteristics were present across some playing positions for both males and females. Speed and agility differences between some playing positions were also present. Best players differed to Rest players on a number of anthropometric and physiological variables for both males and females. Regression analyses indicated that anthropometric and physiological profiling can contribute to selection procedures in junior basketball, however determinants of success are multi-factorial.

Ugarkovic, D., Matavulj, D., Kukolj, M., & Jaric, S. (2002) investigated whether variables routinely assessed while testing athletes can also predict movement performance. The relation between jumping performance and standard strength, anthropometric, and body composition variables was examined in

elite junior basketball players. The 33 males were tested for maximal vertical jump, as well as for maximal isometric voluntary force and rate of force development of hip and knee extensors. Standard anthropometric and body composition measures were also taken. The results obtained dispute the use of the examined tests in sport performance assessment, and also question applying the tests for other purposes such as evaluation of training procedures or selection of young athletes. Therefore, the results are in line with the concept that a reliable performance assessment in homogeneous groups of athletes requires predominantly movement-specific testing.

Apostolidis, N., Nassis, G. P., Bolatoglou, T., & Geladas, N. D. (2004) described the physiological and technical characteristics of elite young basketball players, and b) to examine the relationship between certain field and laboratory tests among these players. Thirteen male players of the junior's Basketball National team performed a run to exhaustion on the treadmill, the Wingate test and 2 types of vertical jump. On a separate day, the field tests (control dribble, defensive movement, speed dribble, speed running, shuttle run and dribble shuttle run) were conducted. It was concluded that, these players presented a moderate VO₂max and anaerobic power. The significant correlation between P_{mean} and certain field tests indicates that these tests could be used for the assessment of anaerobic capacity of young basketball players.

Ioakimidis, P., Gerodimos, V., Kellis, E., Alexandris, N., & Kellis, S. (2004) examined maximal isometric strength characteristics of young male basketball players taking into consideration the combined effects of chronological age and sexual maturation. One hundred and twenty male basketball players, aged from 12 to 17 years divided into 6 equivalent age subgroups performed maximum bilateral

isometric leg press efforts. The parameters analysed were the maximal voluntary isometric force (MVC), relative strength (MVC/body mass and MVC/fat free mass), starting strength (F50: force exerted during the first 50 ms of the contraction) and speed strength index (the ratio of maximal force to time to attain maximal force). It was concluded that, maximum absolute strength of basketball players is significantly increased from 12 to 17 years and as sexual maturation stage increases. It also appears that body mass and fat free mass should be taken into consideration when examining age effects on strength in basketball players.

Woolstenhulme, M. T., Bailey, B. K., & Allsen, P. E. (2004) measured vertical jump, anaerobic power, and shooting accuracy in 18 Division I women basketball players (age 18-22 years) 6 hours following a morning strength training routine called a lift day (LD) and on a control day in which no strength training was performed. Subjects had been strength trained for 4 weeks prior to testing. These data suggest that in collegiate women basketball players, a previous bout of strength training has no negative effect on vertical jump height, anaerobic power, or shooting accuracy.

Gorostiaga, E. M., Granados, C., Ibáñez, J., & Izquierdo, M. (2005) compared physical characteristics (body height, body mass [BM], body fat [BF], and free fatty mass [FFM]), one repetition maximum bench-press (1RM (BP)), jumping explosive strength (VJ), handball throwing velocity, power-load relationship of the leg and arm extensor muscles, 5- and 15-m sprint running time, and running endurance in two handball male teams: elite team, one of the world's leading teams (EM, n = 15) and amateur team, playing in the Spanish National Second Division (AM, n = 15). EM had similar values in body height, BF, VJ, 5- and 15-m sprint

running time and running endurance than AM. However, the EM group gave higher values in BM (95.2 +/- 13 kg vs. 82.4 +/- 10 kg, $p < 0.05$), FFM (81.7 +/- 9 kg vs. 72.4 +/- 7 kg, $p < 0.05$), 1RM (BP) (107 +/- 12 kg vs. 83 +/- 10 kg, $p < 0.001$), muscle power during bench-press (18 - 21 %, $p < 0.05$) and half squat (13 - 17 %), and throwing velocities at standing (23.8 +/- 1.9 m . s (-1) vs. 21.8 +/- 1.6 m . s (-1), $p < 0.05$) and 3-step running (25.3 +/- 2.2 m . s (-1) vs. 22.9 +/- 1.4 m . s (-1), $p < 0.05$) actions than the AM group. Significant correlations ($r = 0.67 - 0.71$, $p < 0.05 - 0.01$) were observed in EM and AM between individual values of velocity at 30 % of 1RM (BP) and individual values of ball velocity during a standing throw. Significant correlations were observed in EM, but not in AM, between the individual values of velocity during 3-step running throw and the individual values of velocity at 30 % of 1RM (BP) ($r = 0.72$, $p < 0.05$), as well as the individual values of power at 100 % of body mass during half-squat actions ($r = 0.62$, $p < 0.05$). The present results suggest that more muscular and powerful players are at an advantage in handball. The differences observed in free fatty mass could partly explain the differences observed between groups in absolute maximal strength and muscle power. In EM, higher efficiency in handball throwing velocity may be associated with both upper and lower extremity power output capabilities, whereas in AM this relationship may be different.

Sallet, P., Perrier, D., Ferret, J. M., Vitelli, V., & Baverel, G. (2005) evaluated the physical and physiological characteristics of different first (ProA) and second division (ProB) professional basketball players, and to relate them to playing position and level of play. A total of 58 players were divided into ProA and ProB groups and were assessed for physical characteristics, maximal treadmill test and a 30 s all-out test. The sample included 22 centers, 22 forwards and 14 guards. It

was concluded that, many physical differences, most notably size, exist between players as a function of their playing position. But these differences have no relationship to the level of play of professional players. General aerobic capacity is fairly homogeneous between playing position and level of play, even if there are observable VO₂max differences due to inter-individual profiles.

Bayios, I. A., Bergeles, N. K., Apostolidis, N. .G, Noutsos, K. S., & Koskolou, M. D. (2006) determined the anthropometric profile, body composition and somatotype of elite Greek female basketball (B), volleyball (V) and handball (H) players, b) and compared the mean scores among sports and c) to detect possible differences in relation to competition level. A total of 518 female athletes, all members of the Greek first National League (A1 and A2 division) in B, V and H sport teams participated in the present study. Twelve anthropometric measures required for the calculation of body composition indexes and somatotype components were obtained according to the established literature. It was concluded that, anthropometric, body composition and somatotype variables of Greek female elite teamball players varied among sports; selection criteria, hours of training and sport-specific physiological demands during the game could explain the observed differences.

Ostojic, S. M., Mazic, S., & Dikic, N. (2006) described structural and functional characteristics of elite Serbian basketball players and to evaluate whether players in different positional roles have different physical and physiological profiles. Five men's basketball teams participated in the study and competed in the professional First National League. Physiological measurements were taken of 60 players during the final week of their preparatory training for competition. The results of the present

study demonstrate that a strong relationship exists between body composition, aerobic fitness, anaerobic power, and positional roles in elite basketball.

Castagna, C., Chaouachi, A., Rampinini, E., Chamari, K., & Impellizzeri, F. (2009) examined the aerobic fitness and lower-limbs explosive-power abilities of Italian regional-level amateur basketball players. Participants were basketball players playing successfully at a senior (S, n = 11) and junior (J, n = 11) regional level. Players maximal oxygen uptake (VO₂max) was assessed with them wearing a portable gas analyzer (K4b, COSMED, Rome, Italy) during an exercise mode-specific multistage fitness test (yo-yo endurance test [Yo-Yo]). Knee extensors and plantar flexors explosive power was assessed with countermovement jump (CMJ) and stiff-leg jumps (SL), respectively. Jumps were performed using a switch mat connected to a computer (Muscle Lab, Bosco System, Rome, Italy). Jumps' fly (FT) and contact times (CT) were used for jump performances calculations. Stiff-Leg FT versus CT ratio (SL/CT) was considered as representative of lower-leg explosive power, whereas SL/CMJ.100 was considered as sign of the explosive-power balance between lower and upper leg muscles. Players' VO₂max was 60.88 +/- 6.26 and 50.33 +/- 3.98 mLxkgxmin for J and S, respectively (p < 0.05). A significant difference was found in SL/CT between S and J players. Yo-Yo performance was not significantly different between groups (2,055 +/- 267 and 2,020 +/- 174 m for S and J, respectively, p > 0.05). Lower-leg explosive power showed to be positively related to distance covered during Yo-Yo. Study results showed that 50 mLxkgxmin is a sufficient VO₂max value for competing at a regional level. Calf explosive power should be considered to improve sport-specific running performance in basketball using plyometrics and whole body lifts.

Cormery, B., Marcil, M., & Bouvard, M. (2007) evaluated by examining data collected on professional basketball players during a 10-year period, the differences in aerobic capacity in function of the playing position and the impact on these parameters of the change in time regulation of 2000, which shortened the time allowed to attempt a field goal by 6 s and divided the duration of play in four quarters. Twice a year between 1994 and 2004, professional basketball players (n = 68) were studied for anthropometric characteristics and were submitted to an incremental exercise test on a cycle ergometer. Statistical analyses were carried out to determine the interaction between the playing position and the effect of the change in time regulation on the physiological characteristics of the players. In conclusion, while anthropometric characteristics remained constant during the last decade, the change in rule of 2000 may have contributed in modifying the physiological profile of basketball players, by generally increasing their level of fitness.

Granados, C., Izquierdo, M., Ibañez, J., Bonnabau, H., & Gorostiaga, E. M. (2007) compared physical characteristics (body height [BH], body mass [BM], body fat [BF], and fat free mass [FFM]), one repetition maximum bench press (1RM (BP)), jumping explosive power (VJ), handball throwing velocity, power-load relationship of the leg and arm extensor muscles, 5- and 15-m sprint running time, and running endurance in elite (n = 16; EF) and amateur (n = 15; AF) female handball players aged 17 - 38. It was concluded that, the higher absolute values of maximal strength and muscle power, although explained by the differences in fat free mass, will give EF an advantage to sustain certain handball game actions.

Cavala, M., Rogulj, N., Srhoj, V., Srhoj, L., & Katić, R. (2008) identified biomotor structures in elite female handball players, factor structures of

morphological characteristics and basic motor abilities, and of variables evaluating situation motor abilities of elite female handball players ($n = 53$) were determined first, followed by determination of differences and relations of the morphological, motor and specific motor space according to handball performance. Factor analysis of 16 morphological measures produced three morphological factors, i.e. factor of absolute voluminosity, i.e. mesoendomorph, factor of longitudinal skeleton dimensionality, and factor of transverse hand dimensionality. Factor analysis of 15 motor variables yielded five basic motor dimensions, i.e. factor of agility, factor of throwing explosive strength, factor of running explosive strength (sprint), factor of jumping explosive strength and factor of movement frequency rate. Factor analysis of 5 situation motor variables produced two dimensions: factor of specific agility with explosiveness and factor of specific precision with ball manipulation. It was concluded that, concerning basic motor abilities, the factor of movement frequency rate, which is associated with the ability of ball manipulation, was observed to predict significantly the handball players' performance.

Delextrat, A., & Cohen, D. (2008) examined whether the changes in the rules of the game instituted in 2000 have modified the physiological factors of success in basketball. The performances of 8 elite male players and 8 average-level players were compared in order to identify which components of fitness among agility, speed, anaerobic power, anaerobic capacity, and upper body strength were key determinants of performance in modern basketball. Each subject performed 7 tests, including vertical jump (VJ), 20-m sprint, agility T test, suicide sprint, 30-second Wingate anaerobic test (WAnT), isokinetic testing of the knee extensors, and 1 repetition maximum (1RM) bench press test. The statistical difference in the anaerobic performances was assessed by Student's t test. These results emphasized the

importance of anaerobic power in modern basketball, whereas anaerobic capacity does not seem to be a key aspect to consider.

Granados, C., Izquierdo, M., Ibáñez, J., Ruesta, M., & Gorostiaga, E. M. (2008) examined the effects of an entire season on anthropometric characteristics, physical fitness, and throwing velocity. One-repetition-maximum bench press (1RMBP), jumping explosive strength, power-load relationship of the leg and arm extensor muscles, 5- and 15-m sprint running time, endurance running, and handball throwing velocity were assessed in four periods. Individual volumes and intensities of training and competition were quantified for 11 activities. It was concluded that, the handball season resulted in significant increases in anthropometric characteristics, physical fitness, and throwing velocity. The correlations observed suggest the importance of including explosive strength exercises of the knee and elbow extensions. Special attention may be needed to be paid to the mode of body fat loss, to increase endurance capacity without interfering in strength gains.

Visnapuu, M., & Jürimäe, T. (2008) investigated the relationships between basic body and specific hand anthropometric parameters with some specific and non-specific throw test results in young male handball and basketball players. The subjects included 34 handball and 38 basketball players of the 10-11 years old age group, 39 handball and 22 basketball players of the 12-13 years old age group and 39 handball players of the 14-15 years old age group. Our conclusion is that the basic anthropometric parameters are slightly more important than hand anthropometry that influenced different throw tests results in young handball and basketball players.

Chaouachi, A., Brughelli, M., Chamari, K., Levin, G. T., Ben Abdelkrim, N., & Laurencelle, L., (2009) examined the relationship between

squat 1 repetition maximum (1RM) and basketball-relevant tests and the variables that influence agility (T-test) in elite male professional basketball players. In light of the present study's findings, agility should be regarded as a per se physiological ability for elite basketball players. Consequently, basketball-specific agility drills should be stressed in elite basketball training. Given the association between squat 1RM performance and short sprint times, squat exercises should be a major component of basketball conditioning.

Chaouachi, A., Brughelli, M., Levin, G., Boudhina, N. B., Cronin, J., & Chamari, K. (2009) tested anthropometric, physiological, and performance characteristics of an elite international handball team. Twenty-one elite handball players were tested and categorized according to their playing positions (goalkeepers, backs, pivots, and wings). Testing consisted of anthropometric and physiological measures of height, body mass, percentage body fat and endurance (VO₂max), performance measures of speed (5, 10, and 30 m), strength (bench press and squat), unilateral and bilateral horizontal jumping ability, and a 5-jump horizontal test. In conclusion, performance abilities between positions in elite team-handball players appear to be very similar. Single leg horizontal jumping distance could be a specific standardized test for predicting sprinting ability in elite handball players.

Delextrat, A., & Cohen, D. (2009) investigated the effect of playing position on strength, power, speed, and agility performances of women basketball players. Thirty subjects playing at national level participated in this study. They were divided into 3 groups according to playing position: guards (positions 1 and 2), forwards (positions 3 and 4), and centers (position 5). Each subject performed 8 tests presented in a random order: These results indicate that specific fitness training must

be undertaken according to playing position. The ability to perform the suicide run, the single-leg jump, and the different movements involved in the agility T-test must be developed in guards. In contrast, speed over short distances and strength development of lower body and upper body should be performed by all playing positions.

Hoffman, J. R., Vazquez, J., Pichardo, N., & Tenenbaum, G. (2009) compared anthropometric and performance variables in professional baseball players and examined the relationship between these variables and baseball-specific performance. During a 2-year period, 343 professional baseball players were assessed for height, weight, body composition, grip strength, vertical jump power, 10-yard sprint speed, and agility. Results indicated that both anthropometric and performance variables differed between players of different levels of competition in professional baseball. Agility, speed, and lower-body power appeared to provide the greatest predictive power of baseball-specific performance.

Metaxas, T. I., Koutlianos, N., Sendelides, T., & Mandroukas, A. (2009) examined and compare the cardiorespiratory performance and isokinetic muscle strength between Greek soccer and basketball players of different divisions before starting the training season. Study participants included 100 soccer players and 61 basketball players, who were assigned according to the kind of sport and division. All participants underwent anthropometric measurements and performed an exercise test on a treadmill to determine maximal oxygen uptake (VO₂max). Conclusively, a higher level of muscle strength would be preferable in soccer and basketball and would reduce the risk for injuries in the maintenance and rebuilding training periods.

Ziv, G., & Lidor, R. (2009) reviewed a series of studies (n = 51) examining physical attributes, physiological characteristics, on-court performances and nutritional strategies of female and male elite basketball players. These studies included relevant information on physical and physiological variables, such as height, weight, somatotype, relative size, aerobic profile, strength, anaerobic power, agility and speed. It is concluded that the data emerging from these studies, combined with the knowledge already obtained from the studies on physical and physiological characteristics of elite basketball players, should be applied by basketball and strength and conditioning coaches when planning training programmes for elite basketball players.

Ben Abdelkrim, N., Castagna, C., Jabri, I., Battikh, T., El Fazaa, S., & El Ati, J. (2010) examined the demands of competitive basketball games and to study the relationship between athletes' physical capability and game performance. Physical and physiological game demands and the association of relevant field test with game performance were examined in 18 male junior basketball players. Computerized time-motion analysis, heart rate (HR), and blood-lactate concentration [BL] measurements were performed during 6 basketball games. Players were also measured for explosive power, speed, agility, and maximal-strength and endurance performance. This study showed that basketball players experience fatigue as game time progresses and suggests the potential benefit of aerobic and agility conditioning in junior basketball.

Ben Abdelkrim, N., Chaouachi, A., Chamari, K., Chtara, M., & Castagna, C. (2010) compared the physical attributes of elite men's basketball players according to age and specific individual positional roles. Forty-five players

from 3 national basketball teams (Under-18 years, Under-20 years, and Senior) were measured for anthropometry (height, body mass, percentage body fat), explosive power (5 jumps and vertical jump), speed (5-m, 10-m, and 30-m sprint), agility (T-test), strength (bench press and squat 1 repetition maximum [1RM]), and intermittent high-intensity endurance performance (Yo-Yo intermittent recovery test [Yo-Yo IR1]). Data on match frequency, training routines, and playing experience were also collected. These results showed the existence of age and positional role differences in fitness performance in men's basketball. Differences were particularly evident in intermittent high-intensity endurance and agility performance. Sprint training possibly should be individualized when dealing with positional roles in elite men's basketball.

Chelly, M. S., Hermassi, S., & Shephard, R. J. (2010) investigated relationships between peak power (PP) as measured by upper limb (PPUL) and lower limb (PPLL) force-velocity tests, maximal upper limb force assessed by 1 repetition maximum bench press (1RMBP), and pullover (1RMPO) exercises, estimates of local muscle volume and 3-step running handball throwing velocity (T3-Steps). Our results also highlight the contribution of both the lower and the upper limbs to handball throwing velocity, suggesting the need for coaches to include upper and lower limb strength and power programs when improving the throwing velocity of handball players.

Colson, S. S., Pensini, M., Espinosa, J., Garrandes, F., & Legros, P. (2010) investigated the influence of 4 weeks of whole-body vibration training added to the conventional training of basketball players. Eighteen competitive basketball players were randomly assigned to a whole-body vibration group or a control group. During the 4-week period, all subjects maintained their conventional

basketball training program. The members of WBVG were additionally trained 3 times a week for 20 minutes on a vibration platform (10 unloaded static lower limb exercises, 40-Hz, 4-mm, Silverplate). The results of the present study indicated that a 4-week whole-body vibration training program added to the conventional training of basketball players during the preseason is an effective short-term stimulus to enhance knee extensor strength and slightly SJ performance.

Erčulj, F., Blas, M., & Bračić, M. (2010) determined and analyze the level of certain motor abilities (acceleration and agility, the explosive strength of arms, and take-off power) of young elite European female basketball players. We also wanted to establish whether there were any differences between 3 groups of female basketball players who differed in terms of their playing performance. The sample of subjects consists of 65 female basketball players aged 14.49 (± 0.61) years who were divided into 3 groups (divisions A, B, and C of the European Championships). The findings of this study will enable the generation of model values, which can assist basketball coaches for this age category in basketball clubs, high schools, national teams, and basketball camps.

Franciosi, E., Guidetti, L., Gallotta, M. C., Emerenziani, G. P., & Baldari, C. (2010) determined the contributions of selected fundamental factors to basketball performance in adult players with mental retardation (MR). Fourteen trained male players with MR (32.1 \pm 7.4 years) were recruited. The athletes' performances were assessed using adapted basketball tests that assessed 4 ability levels of increasing difficulty (from I to IV), each one characterized by the analysis of 4 fundamental areas: ball handling, reception, passing, and shooting. The fundamental factors included anthropometric measurements (height, weight, and body mass index),

static balance, muscular strength and endurance, explosive leg power, cardiovascular endurance, and motor coordination. In conclusion, the results showed the possibility to determine the contribution of selected fundamental factors to basketball performance.

Lidor, R., & Ziv, G. (2010) reviewed a series of studies ($n = 31$) on physical attributes, physiological attributes, and on-court performances of female volleyball players. Empirical and practical knowledge emerging from studies on training-related issues in volleyball, such as body mass, fat-free mass, aerobic profile, strength, and agility and speed, should be integrated and applied when planning annual training programs for volleyball players. Based on our review, it was found that (a) players of a higher skill level are taller, somewhat heavier, and have higher vertical jump values than players of a lower level; (b) the aerobic profile of female volleyball players is similar to that of female basketball players; (c) ballistic resistance training can increase vertical jump values in female volleyball players; and (d) preseason conditioning should be conducted to prevent fatigue and reduced performance at the beginning of the season.

Lira, C. A., Vancini, R. L., Minozzo, F. C., Sousa, B. S., Dubas, J. P., & Andrade, M. S.(2010) evaluated aerobic and anaerobic performance of wheelchair basketball athletes and verify a correlation with the International Wheelchair Basketball Federation functional classification system. For this, 17 highly trained male Brazilian basketball wheelchair athletes (25.4 ± 4.4 years) from the national team who had taken part in the Athens 2004 Paralympic Games were assessed. These athletes were submitted to cardiopulmonary exercise testing and Wingate-like 30-s sprint test using upper limbs. The present study demonstrated that

the functional classification score correlated with relative ($r=0.90$; $P<0.0001$) and absolute peak power ($r=0.50$; $P=0.0353$) and absolute mean power ($r=0.93$; $P<0.0001$) obtained from the Wingate-like 30-s sprint test and also correlated with absolute O(2) peak ($r=0.68$; $P=0.0026$) and O(2) at ventilatory threshold ($r=0.71$; $P=0.0014$), measured on cardiopulmonary exercise testing. Therefore, our findings support the functional classification created to classify athletes' functional capability on the court, which also correlated with aerobic and anaerobic performance parameters of the elite wheelchair basketball players.

Cortis et al., (2011) aimed to verify whether basketball players are able to maintain strength (handgrip), jump (countermovement jump [CMJ]), sprint (10 m and 10 m bouncing the ball [10 mBB]), and interlimb coordination (i.e., synchronized hand and foot flexions and extensions at 80, 120, and 180 bpm) performances at the end of their game. Ten young (age 15.7 ± 0.2 years) male basketball players volunteered for this study. During the friendly game, heart rate (HR), rate of perceived exertion (RPE), and rate of muscle pain (RMP) were assessed to evaluate the exercise intensity. These findings indicate that the heavy load of the game exerts beneficial effects on the efficiency of executive and attentive control functions involved in complex motor behaviors.

2.2 STUDIES ON PERSONALITY TRAITS IN SPORT

Daniel Garland., & John Barry, R. (1990) determined if athletes' personality and specific perceived leader behaviors of their coach are predictive of performance in collegiate football. Prior to regular season competition, collegiate football players ($n = 272$) from three southeastern United States universities completed Cattell's Sixteen Personality Factor (16 PF) questionnaire and the Leadership Scale for Sports

(Perception version). Following regular season competition, players were grouped by their coaches into one of three athletic performance categories (Regulars, Substitutes, and Survivors). It was found that the personality traits extroversion, emotional stability, tough-mindedness, and group-dependence, along with the perceived leader behaviors of training and instruction, democratic behavior, autocratic behavior, social support, and rewarding behavior, were predictive of performance in collegiate football, independently and interactively. The findings are discussed in relation to Chelladurai's multidimensional theory of leadership.

Roger Rees, C., Frank Howell, M., & Andrew Miracle, W. (1990) discussed do high school sports build the personality character. Popular sport culture, conventional social wisdom and promotional ideology by athletic associations suggest that participation in high school varsity sports programs has positive effects on prosocial personality traits (i.e., sport “builds character”). While it is an open ended process to specify which facets of personality are affected during the high school years by playing sports, we use a broad array of personality measures in a secondary analysis of a five-wave panel of U.S. males. Drawing from the nationally representative Youth in Transition panel (n = 1,628), we employ a quasi-experimental design incorporating pre- and post-sports participation measures of personality to evaluate the “sport builds character” argument. Few statistically significant effects of varsity sports participation on social character are observed in these data on males during the late-60s and early-70s. Since little positive evidence was found, we challenge the “sports builds character” myth of conventional high school sport programs.

Montserrat Gomà Freixanet., (1991) investigated the relationship between some personality traits and participation in high physical risk sports. Twenty-seven alpinists, 72 mountaineering-related sportsmen, 221 sportsmen and 54 subjects not engaged in any risky activity, were administered the Sensation Seeking Scale, the EPQ, the Impulsiveness Scale of the IVE, the Socialization Scale of the CPI, and the Susceptibility to Punishment and Reward Scales. The results seem to indicate that there exists a personality profile of subjects engaged in high physical risk normative activities who share the following characteristics: extraversion, emotional stability, conformity to social norms, and seeking thrill and experience by socialized means.

Boris Egloff., & Jan Gruhn, A. (1996) examined personality as related to endurance sports. Compared to a group of non-exercisers ($n = 73$) with similar scores on demographic variables, 86 triathletes and long-distance runners were more extraverted and reported less physical complaints. Groups did not differ concerning Neuroticism and Lie scores. Outstanding athletes (11 hr or more training per week) were more extraverted than average sportsmen (less than 4 hr). Neuroticism was associated with “management of negative affect” and “recreation” as reasons for beginning with endurance sports. Extraversion correlated with improvements due to sporting activity in “goal achievement/success”, whereas intensity of training was associated with positive changes in “physical health”. These results are discussed in terms of psychological processes related to the benefits of endurance sports and with respect to factors that might influence successful performance.

Dennis O'Sullivan, M., Marvin Zuckerman., & Michael Kraft. (1998) determined the personality characteristics of male and female in team sports. Males members of two college teams, baseball and football, and female members of two

teams, field hockey and lacrosse (combined) and equestrians, were compared on the five scales of the Zuckerman-Kuhlman Personality Questionnaire (ZKPQ). All teams were significantly higher on the Activity and lower on the Neuroticism-Anxiety scales than the general college population of the University of Delaware. Lacrosse and field hockey athletes were higher on activity than equestrians and baseball players were higher than football players on this scale. Contrary to predictions, football players scored lower than the general university male population on Impulsive Sensation Seeking and the lacrosse and field hockey players did not differ from the general college females on Impulsive Sensation Seeking. The baseball players also scored lower on this scale. The hypothesis that body contact sports attract high sensation seeking and aggressive participants was not supported. Sensation seeking is more characteristic of participants in high risk sports offering unusual sensation and personal challenges.

Nicholas Neupauer, C. (1999) discussed infra-public relations personality traits investigation within the little known public relations employment area of Sports Information Directors (SIDs) draws on the national SID benchmark study by McCleneghan (1995) and the socio-metric instrument work of McCroskey and Richmond (1993, 1990, 1987, and 1982). SIDs employed at universities in New York, Pennsylvania, West Virginia, and Maryland completed four “personality traits” instruments to study what differences might exist between those SIDs practicing at Division I intercollegiate athletic programs vs. others employed at Division I-AA, II, III, and NAIA. This infra-public relations study of the underreported SID profession presents a personality traits profile of SIDs employed at “big” vs. “small” athletic programs in the East.

Ralph Piedmont, L., David Hill, C. & Susana Blanco. (1999) determined if the dimensions of the five-factor model of personality could be used as predictors of athletic performance and (b) to demonstrate the utility of the five-factor model as a theoretical paradigm capable of organizing personality research on athletic competition. Subjects were 79 female athletes from four different women's NCAA Division 1 soccer teams. All subjects completed a bipolar adjective scale designed to measure the five factors. Coaches ratings on several performance dimensions and actual game statistics were also collected. Regression analyses indicated that the personality dimensions of neuroticism and conscientiousness explained approximately 23% of the variance in coaches ratings, while conscientiousness was the sole predictor of actual games statistics, explaining about 8% of the variance. The potential theoretical and empirical value of these findings was discussed.

Marco Lauriola, & Irwin Levin, P. (2001) discussed historic differences in the way that personality psychologists and decision-making researchers have studied risk-taking, and then described a preliminary study that combines elements of the two approaches. Using an Italian sample of varying age levels, this study examined the relations among personality traits (the Big-Five), demographics (age and gender) and risk-taking. Separate measures of risk-taking in a controlled experimental task were derived for trials in which subjects could achieve a gain and for trials in which subjects could avoid a loss. Personality trait effects differed for gains and for losses, and they differed depending on whether demographics were taken into account. Personality factors predicted risk-taking primarily in the domain of gains where high scores on Openness to Experience were associated with greater risk-taking and high scores on Neuroticism were associated with less risk-taking. However, there was a

tendency for Neuroticism to have the opposite effect on risk-taking for losses where high scores were associated with greater risk-taking.

Montserrat Gomà-i-Freixanet. (2001) replicated the functions found in men in a sample of women. Physical-risk taking activities can be classified along a continuum ranging from prosociality to antisociality, the risky sports being in an intermediate point of that hypothetical dimension. The sample consisted of 43 antisocial risk takers incarcerated for having committed armed robbery, 52 risk-taker sportswomen, 74 prosocial risk takers, and 58 women not engaged in any risky activity. Subjects were administered the Sensation Seeking scale, the Eysenck Personality Questionnaire, the Impulsiveness scale of the Impulsiveness–Venturesomeness–Empathy Questionnaire, the Socialization scale of the California Psychological Inventory, and the Susceptibility to Punishment and Reward scales. Discriminant analysis identified in females the same three different profiles of physical risk-taking personality found in males: (1) the Impulsive Unsocialized Sensation Seeker; (2) the Venturesomeness; and (3) the Seeker of Experiences by a nonconforming life style. Moreover, the results seem to support the validity and generalizability across gender of the model being considered. The four personality variables that best discriminate among the risk-taking types are: Socialization, Thrill and Adventure Seeking, Experience Seeking, and Neuroticism.

Steven Reiss., James Wiltz., & Michael Sherman. (2001) determined the two approaches for studying sports motivation — personality theory and motivation theory — were combined in a novel way that permitted an assessment of individual differences in 15 motivational traits. The Reiss Profile of Fundamental Goals and Motivational Sensitivities was administered to college students (n=415) who had

participated in zero, one, or two or more varsity sports at high school or college levels. How many sports a student participated in, called athleticism, was found to be associated with motivational traits for physical exercise ($P < 0.001$), social contact ($P < 0.01$), family life/raising children ($P < 0.001$), vengeance/competition ($P < 0.06$), power/achievement ($P < 0.04$), and with low curiosity ($P < 0.01$). The results supported the relevance of Reiss's motives for studying sports motivation.

Ryan Rhodes, E., Kerry Courneya, S., & Lee Jones, W. (2004) replicated the findings for a direct effect of the activity personality trait on exercise behavior while controlling for the Theory of Planned Behavior (TPB), and to investigate a possible moderating effect for gender. Undergraduate students ($N=298$) completed measures of the TPB, activity trait, and a two-week follow-up of exercise behavior. It was concluded that, the activity trait predicts exercise intention and behavior independent of social cognition even over a short two week period. The TPB may need to broaden its measurement domain in order to mediate the effect of personality on behavior. Moreover, exercise practitioners may need to consider personality when developing interventions.

Ryan Rhodes, E., Kerry Courneya, S., & Lee Jones, W. (2005) examined lower-order personality facet traits of neuroticism, extraversion, and conscientiousness as moderators of the TPB. Hypotheses were generated based upon the specific personality traits and previous research, but all possible moderating effects were examined given the exploratory nature of the research. Participants were 298 undergraduate students (mean age=19.97) who completed measures of the TPB, personality, and a two-week follow-up of exercise behavior. Results showed that two personality facets (i.e., industriousness-ambition, irritability) significantly ($p < 0.01$)

moderated the relationship between the TPB and exercise behavior and two personality facets (i.e., insecurity, activity-adventurousness) significantly ($p < 0.01$) moderated the relationship between the TPB and intention. The moderating effects were small-to-moderate (e.g., 3–4% additional explained variance). Theoretical and practical implications for exercise behavior were discussed.

Stephen McDaniel, R., Choonghoon Lim., & Joseph Mahan, E. (2007) examined the effect of central (sensation seeking, SS) and surface (Curiosity about Morbid Events, CAME) traits, along with gender, to account for variance in consumer reactions to advertisements utilizing violent/non-violent images to promote sports media. Regression results indicate that subjects' ad response is moderated by OSL constructs, while CAME is found to mediate the effect of SS. Practical and theoretical implications are discussed along with future directions for research.

Harley Hartung, G., & Emile Farge, J. (2009) determined a series of personality and physiological tests and measurements were made in 48 healthy male runners and joggers 40-59 years of age ($x = 47.3$ yrs.). The Cattell 16 Personality Factor Questionnaire showed that the subjects were significantly more intelligent, imaginative, reserved, self-sufficient, sober, shy, and forthright than the general population. A maximal treadmill test revealed the men to be well above the mean for their age in terms of cardiorespiratory fitness. The men who had run a marathon race and the 40-49-year-age group were higher in terms of fitness than nonmarathoners and the 50-59-age groups, but the groups differed very little from each other on personality characteristics. Middle-aged runners and joggers either possess or develop high levels of self-sufficiency and imagination and tend toward introversion in their

personality makeup. It is not known for sure if these factors are a result of or a casual factor in their habitual exercise pattern.

Mahin Etemadi Nia, & Mohammad Ali Besharat. (2010) compared athletes' personality characteristics in individual and team sports. 134 athletes (92 team, 42 individual, 88 males, and 46 females) completed the NEO Personality Inventory-Revised (NEO-PI-R) and the Sociotropy-Autonomy Scale (SAS). The results revealed that individual sport athletes scored significantly higher on conscientiousness and autonomy than did team sport athletes. The team sport athletes scored significantly higher on agreeableness and sociotropy than did the individual sport athletes. No significant difference was found between the two groups on neuroticism, extraversion, and openness. It can be concluded that athletes' personality characteristics are different for individual and team sports.

Ben Jackson., James Dimmock, A., Daniel Gucciardi, F., & Robert Grove, J. (2011) explored how Big Five traits predicted relationship commitment and relatedness (i.e., closeness, trust) for members of established coach–athlete dyads. Ninety one athletes (Mage = 20.76, SD = 3.55) and their coaches (n = 91, Mage = 37.33, SD = 10.17) reported their own Big Five as well as their relationship commitment and relatedness perceptions. Analyses were conducted using actor–partner interdependence models due to the non-independence in coach and athlete data. Consistent with mainstream relationship settings, the Big Five model may provide important insight into dyadic functioning in coach–athlete contexts.

Marina Shariati., & Sabah Bakhtiari. (2011) compared the personality characteristics (neuroticism, extraversion, openness to experience, agreeableness and conscientiousness) non-athlete students and student athletes, Islamic Azad University

of Ahvaz deals. The study population included all students (boys and girls), Islamic Azad University of Ahvaz in the school year to 1389- 90 jobs were studied. The study sample included 200 students from the community (100 athletes and 100 non-athletes) that for their selection of multistage cluster sampling was used. Data collection tool was demographic data and Personality Characteristics (NEO). Statistical analysis was performed using descriptive statistics (central tendency and dispersion indexes) and Multivariate analysis of variance. Results showed that participation in sports has a positive effect on the personality characteristics of people. Also athletes are more positive personality characteristics than non-athletes.

Ekrem Deniz., Oguzhan Yoncalik., Sevda Aslan., & Nuri Sofi. (2012) analyzed the impact of orienteering sport taught through creative drama methods on individuals' emotional instability/neuroticism, extroversion, openness to experience, agreeableness and conscientiousness dimensions. With this aim in mind, Adjective Based Personality Test (ABPT) (Bacanlı, İlhan ve Aslan, 2009) consisting of emotional instability/neuroticism, extroversion, openness to experience, agreeableness and conscientiousness dimensions and based on Five-Factor Theory was implemented on physical education department students studying at Kırıkkale University during spring 2010-2011 academic year. The ABPT was implemented on university students before they started studying orienteering sport taught by creative drama methods. The test consisting of emotional instability/neuroticism, extroversion, openness to experience, agreeableness and conscientiousness dimensions includes 40 items. The ABPT was implemented on the students again after they had completed the 10-week orienteering sport programme taught by creative drama methods. The findings of this study revealed that there was a meaningful difference between the emotional instability/neuroticism, extroversion, openness to experience, agreeableness,

conscientiousness dimensions pretest and posttest scores of the study group in favour of conscientiousness dimension.

Gregory Appelbaum, L., Matthew Cain, S., Elise F. Darling., Steven Stanton, J., Mai Thi Nguyen., & Stephen Mitroff. (2012) examined four broad categories of factors that may explain variability in the reported amount of time spent watching sports. Using individual difference regression techniques, we explore the relationship between sports spectating and physiological measures (e.g., testosterone and cortisol), clinical self-report scales (ADHD and autism), personality traits (e.g., NEO “Big Five”), and pastime activities (e.g., video game playing). Our results indicate that individuals who report higher levels of sports spectating tend to have higher levels of extraversion, and in particular excitement seeking and gregariousness. These individuals also engage more in complementary pastime activities, including participating in sports and exercise activities, watching TV/movies, and playing video games. Notably, no differences were observed in the clinical self-report scales, indicating no differences in reported symptoms of ADHD or autism for spectators and non-spectators. Likewise, no relationship was seen between baseline concentrations of testosterone or cortisol and sports spectating in our sample. These results provide an assessment of the descriptive personality dimensions of frequent sports spectators and provide a basic taxonomy of how these traits are expressed across the population.

Ingrid Lin, Y., & Reginald Worthley. (2012) aimed to extend the previous servicescape literature and to examine servicescapes as a moderating variable on a comprehensive model of individual personality traits, emotions, satisfaction, and approach-avoidance behaviors. The highlight of the present research is to incorporate the effects of different personality traits (i.e., extroversion, openness to experience,

and arousal-seeking tendency) and moderation of different servicescape situations (i.e., Gestalt versus Non-Gestalt) on emotions, satisfaction, and approach-avoidance behavior. The value of assessing the effects of different personality traits with different settings is demonstrated. This study utilizes an experimental design with the appropriate manipulation of ambient stimuli of the combined colors and music to form differential servicescapes and participants were randomly assigned to these servicescapes. Survey data from 261 participants were then collected on personality traits, emotions, satisfaction and approach-avoidance behavior and the data were analyzed by structural equation modeling to test the present research framework. Results indicate that Gestalt versus Non-Gestalt servicescape situations moderated the relationship between arousal-seeking tendency and emotions. Pleasure was found to enhance satisfaction, and satisfaction was found to enhance approach-avoidance behaviors. Limitations, managerial and future implications are explained further in the content of the paper.

Katharina Geukes., Christopher Mesagno., Stephanie Hanrahan, J., & Michael Kellmann. (2012) tested if situation-relevant traits (i.e., narcissism, public self-consciousness) predict performance in applied high-pressure situations, while situation-irrelevant traits (i.e., private self-consciousness) do not contribute to the performance explanation. Experienced handball players (N = 55) completed personality questionnaires and performed a throwing task in low and high-pressure conditions, whereby the high-pressure condition involved 1500–2000 spectators during halftime breaks of professional handball games. Results emphasize that trait activation is a promising explanation for the relevance of personality characteristics to performance under pressure. A systematic consideration of situational demands of

high-pressure situations will result in adequate appraisals of situation-trait relevance and help predict performance with trait scores.

Magdalena Tolea, I., Antonio Terracciano, Eleanor Simonsick, M., Jeffrey Metter, E., Paul Costa, T., & Luigi Ferrucci. (2012) determined the associations among personality as measured by the Five Factor Model, physical activity, and muscle strength were assessed using data from the Baltimore Longitudinal Study of Aging (N = 1220, age: mean = 58, SD = 16). General linear modeling with adjustment for age, sex, race, and body mass index, and bootstrapping for mediation were used. We found neuroticism and most of its facets to negatively correlate with strength. The extraversion domain and its facets of warmth, activity, and positive-emotions were positively correlated with strength, independent of covariates. Mediation analysis results suggest that these associations are partly explained by physical activity level. Findings extend the evidence of an association between personality and physical function to its strength component and indicate health behavior as an important pathway.

Christopher Merritt, J., & Ian Tharp, J. (2013) assessed the effect of self-efficacy on the relationship between personality and risk-taking in parkour/free-running, a growing high-risk sport. 277 parkour and free-running practitioners were recruited online to complete a survey assessing Big Five personality traits, self-efficacy and perceived risk-taking. It was concluded that Self-efficacy plays a significant mediation role in the relationship between stable traits of neuroticism and conscientiousness, and risk-taking amongst parkour/free-running practitioners.

Michael Ashton, C. (2013) discussed “personality trait” or “personality characteristic” are used simply in the way that they would be in everyday

conversation. This familiar meaning is pretty close to what psychologists have in mind when they discuss personality traits, but it would be useful to have at least a rough definition. Briefly, a personality trait refers to differences among individuals in a typical tendency to behave, think, or feel in some conceptually related ways, across a variety of relevant situations and across some fairly long period of time. But this definition has several parts, some of which could be stated more precisely.

Serdar Tok., Erdal Binboğa., Senol Guven., Fatih Çatikkas., & Senol Dane. (2013) investigated the effects of trait emotional intelligence (EI) and the Big Five personality traits on athletes' ability to tolerate stress during isometric maximal voluntary contraction (MVC). Fifty-two elite athletes with a mean age of 21.5 year (17 female) volunteered to participate. The Short Form Big Five Inventory and the Schutte Self-Report Emotional Intelligence Test measured personality and trait EI, respectively. Electromyography (EMG) determined the MVC level of the triceps surae muscle group in the absence and presence of a stressor. The mental stressor was to count downwards, repeatedly subtracting 13 from a starting value of 1000. It was concluded that, athletes with higher levels of conscientiousness and trait EI may be able to tolerate more stress without a decrease in performance.

2.3 SUMMARY OF THE LITERATURE

The review of literature helped the investigator to spot out relevant topics and variables. Further the literature helped the investigator to frame the suitable hypothesis leading to the problems. The latest literature also helped the investigator to support his findings with regard to the problem. Further the literature collected in the study will also help the research scholar understanding in the similar areas.

The reviews were presented in this section revealed the importance of physical fitness and personality traits which was analysed to find out the status and level of Basketball and Handball players at different topography. All the research studies were presented in the section proves that there was a significant difference exists in view of fitness and personality traits of sportsman.

The research studies reviewed are from many journals available in the websites such as www.pubmed.gov, ERIC websites etcetera., employ the selected variables such as physical fitness, variables and psychological variables that too among players at school, college and university level.

The review of literature helped the researcher from the methodological point of view too. It was learnt that most of the research studies cited in this chapter on content analysis and methods as the appropriate methods for finding out the lapses and remediation.