



RESEARCH ARTICLE

Psychological Toughness and its Relationship to Some Coordination, Physical Abilities and Accuracy of Some Basic Skills Performance Among The Iraqi Junior National Handball Team Players

Fouad Muttib HUSSAIN¹, Mohammed Hamza SHUHAIB¹ and Moneer Fadel Ali HASSAN¹

¹University of Baghdad, College of Physical education and sport sciences, Team games, Baghdad / Iraq

*Corresponding author: fouad.hussein@cope.uobaghdad.edu.iq

Abstract

The purpose of this study was to identify the psychological toughness (PT) and its relationship to some coordination and physical abilities, and the accuracy of some basic performance skills of the Iraqi Junior National Handball Team players. The sample consisted of 14 players which constituted 88% of the research community (18) players. The descriptive approach was used to determine the correlation between PT and some coordination and physical abilities, and accuracy of some basic performance skills with single sample design. A questionnaire scale, consists of 32 items was applied. Coordinations tests included ability of differentiation, ability of suitable differentiation, and ability of connectivity. Physical tests included endurance of the muscles arms, endurance strength for arms, speed power of the leg muscles, the distinctive strength of the arms, endurance of speed, and transition speed. Skill tests included passing and receiving, dribbling, passing, shooting were also applied. The results shows that the players had a high PT and a significant coordination, physical and skill performance ($P < .05$). All values were found significant ($P < .05$). The study concluded the need to pay a close attention to the psychological aspects of the team in order to improved the players achievements.

Keywords

Psychological Toughness, Coordination Abilities, Physical Abilities, Handball

INTRODUCTION

Provided by the physical side Physical abilities are the requirement of everyone to overcome the requirements of his work in general, but for the athlete it is very important to overcome the course of training or competition. As for the psychological aspect, employing these physical abilities negatively or positively for the course of work, represented by the physical aspect, it depends on the concept of the athlete's psychological toughness and the strength of his endurance to the course and pressures in competition and training. Team sports in which contact with the opponent is possible but under penalty of law. It requires the athlete to be

psychologically tough and able to complete competitions or training positively away from negative behavior (Moushriq, 2023) refers that handball players are distinguished by their manly play because they possess the elements of strength and speed, also speed is one of the important compound elements that have an effective effect in most sports (Shirzad, 2015).

Handball is one of the sports that need physical strength accompanied by PT in the performance of the required playing skills under high psychological influence. Therefore, the importance of the research is to know the PT and coordination, physical abilities and their relationship to the accuracy of the performance of some basic skills among the players of the Iraqi

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junior national handball team players with the hand, but the problem is that the players whose strength of toughness and psychological endurance are negative away from good abilities, they cannot deal with situations and events of training or competitions positively.

Many scientific researches have dealt with the psychological and physical aspects of handball, including a study (Samer, 2020), which aimed to identify PT and a relationship between the dimensions of PT among athletics players and concluded - to distinguish athletics players that they possess PT, and that there is a significant correlation between the dimensions of PT (commitment - control - and challenge) among athletics players. As for the study (Haidar, 2022), the study aimed to identify the relationship of PT with the skill of kidnapping, and the researcher concluded that mental toughness has a direct link to the skill of kidnapping with weightlifting among students of the first stage, Faculty of Physical Education and Sports Sciences, Al-Mustansiriya University. Students of physical education and sports sciences have the mental strength that helps them accomplish their sports activities. Including a study (Jinan, 2022), which aimed to prepare skill exercises to develop PT and the skill of shooting from the level of the head, while the most important conclusions were that the skill exercises had a very significant and effective impact in developing PT and the skill of shooting from the head level for young people.

The research objective of the current study is to identify PT and coordination, physical abilities and their relationship to the accuracy of the performance of some basic skills among the players of the Iraqi junior national handball team players. As for the hypothesis of the research, it is a correlation between PT, coordination, physical abilities, and the accuracy of the performance of some basic skills among the players of the Iraqi junior national handball team players.

MATERIALS AND METHODS

The descriptive approach in the manner of correlation relations used to suit the research problem, as the research community was determined by (18) players for the Iraqi junior national handball team players, while the research sample is (14) players and the research sample constituted (88%). The researchers used a single

sample design. This case study followed ethical standards according to the College of Physical Education and Sport Sciences University of Baghdad, Iraq (2024).

Table 1. Shows the percentages of sample distribution

Society	Number	Percentage
Research Community	18	%100
Research Sample	14	%77
Exploratory Sample	4	%22

Field Research Procedures

Determining the PT Scale

The PT questionnaire scale (Al-Azzawi, 2004) consists of (32) items and the paragraphs of the scale are answered according to a four-gradient scale (applies to a large degree, applies to a medium degree, applies to a small degree, does not apply to me), which is equivalent to the degrees (1, 2, 3, 4) and the highest score of the scale (128), the hypothetical average 80 and the lowest degree 32 degrees, and the possession of a high score on the scale indicates a high feeling with PT and vice versa.

Determination of coordination, physical abilities and skills

The coordination tests: ability of differentiation, ability of suitable differentiation, ability of connectivity (Fouad, 2016), physical tests: endurance of the muscles arms, endurance strength for arms, speed power of the leg muscles (Mohamed & Ahmed, 1998) the distinctive strength of the arms, endurance of speed, transition speed (Yahya & Saja, 2016), skill tests: passing and receiving, dribbling, passing, shooting (Kamal & Muhammad, 1980) were applied.

Exploratory experiment

The study was conducted an exploratory experiment on a sample of (4) players from outside the main research sample, in which the scale was applied, as well as skill and physical tests, on 5/2/2023, and this scale and these tests were re-applied on 12/2/2023, about seven days later.

Scientific coefficients of the scale and tests

Honesty

The test is honesty if it succeeds in measuring the extent to which the goals for which it was set have been achieved, and honesty is also defined as the degree of honesty that you approach

with complete success to measure what you want to measure. Thorndike expressed the honesty test by saying that it is the test that measures what you

want to measure it with and everything you want us to measure with it and nothing but what you want to measure.

Table 2. Shows the selection and tests of coordination, physical abilities and skills

Abilities and skills	Audition
Ability of differentiation	Passing the ball towards the ring from different heights with the legs together
Ability of suitable differentiation	Defensive movement and dribbling the ball between the cones within (12.21) seconds
Ability of connectivity	Passing, receiving and dribbling the ball around the two cones for (16.62) seconds
Endurance of the muscles arms	Bending and extending the arms from the oblique prone position in (10) times
Endurance strength for arms	Repeat the performance as many times as possible
Speed power of the leg muscles	Partridge farther (right-left) (20) times
The distinctive strength of the arms	Sitting from lying down (20) times
Endurance for speed	Speed Test (30) times
Transition speed	Running in front and back with a distance of (252) m
Passing and receiving	Passing and receiving the ball on the wall from a distance of (4) meters
Dribbling	Dribble test for a distance of (30) m
Passing	Passing test and accuracy of ball guidance from a distance of (30) m
Shooting	Shooting accuracy by high jumping

Honesty of the scale of psychological toughness

To achieve the sincerity of the scale PT, the researcher presented the form containing the aforementioned scale to several experts and specialists in sports psychology and handball, all of whom agreed on the honesty of the scale to apply to handball players.

Authenticity of coordination, physical and skill tests

After most prominent skills and abilities were tested by the experts and specialists in handball, the experts themselves were consulted about the appropriate tests for these skills and abilities, and thus the honesty of the mentioned tests was proved.

Stability

Stability is one of the basic measurement characteristics of the scale, considering the progress of honesty on it, because the honest scale is considered constant, while the fixed scale may not be honest,

Stability of the scale

The stability of the scale has been verified by testing and repeating it and the degree of correlation between the two tests, which shows the degree of stability of the aforementioned scale (0.85) and this indicates the presence of a high reliability coefficient

Stability of tests

The stability of the tests was verified by the test and repeated and the degree of correlation between the two tests. Objectivity: Objectivity is that the test is not affected by the change of arbitrators and that the test gives the same results regardless of the meaning of who evaluates the test and this means excluding self-judgment, as the more objectivity in arbitration, the less subjectivity.

The main research experience

After completing all the scientific requirements of the scale, as well as the tests (coordination, physical and skills), the researcher carried out the research by distributing the forms of the scale PT and conducting the two tests from 12-19/2/2023.

Statistical Analysis

SPSS package program was used in the statistical analysis of our research. It was determined by the normality distribution and skewness coefficients of the data. Significance level was determined as P 0.05 and all data were presented as mean standard deviation (SD) unless stated otherwise. The Pearson correlation test was used to measure the relationship between the various variables in this study.

RESULTS

Table 3. Shows the arithmetic mean and standard deviation of the study variables for the research sample

Variables	N	S	A
Ability of suitable differentiation	14	2.39	.82
Psychological toughness	14	107.5	5.918
Withstand strength for arms	14	12.85	.7703
With the power characteristic of the speed of the arms	14	Repetition/10 times	9.786
The characteristic force of speed for the muscles of the legs	14	m/20 times	48.21
Passing and receiving	14	Repetition/45 times	3.214
Dribbling	14	Number/60 times	107.5
Shooting	14	Number/Aim	12.85

Table 4. shows that there was a positive correlation between PT and ability of suitable differentiation (.773, P<.005).

Table 4. Shows the correlation coefficient and the significance values for PT and the ability of suitable differentiation(coordination)

Variables	Correlation Coefficient	P-Value	Sig.
PT Ability of suitable differentiation	.773	.005	significant

Table 5 shows that there were positive correlation between PT and strength endurance for arms, force speed of the arms, and the distinctive force of speed for leg muscles, (.593* P<.036; .682**, P<.003; and .692** P<.014, respectively).

Table 5. Shows the correlation coefficient and the significance and values of PT and some physical abilities of the research sample

Variables	Correlation Coefficient	P-Value	Sig.
PT Strength endurance for arms	.593*	.036	significant
The force speed of the arms	.682**	.003	significant
The distinctive force of speed for leg muscles	.692**	.014	significant

Table 6 shows that there were positive correlation between PT and passing and receiving, dribbling, shooting (.563*, P<.036; .737**P<.003 and 639* P< .014, respectively).

Table 6. shows the correlation coefficient and the values of significance of PT and some basic skills of the research sample

Variables	Correlation coefficient	P-Value	Sig.
PT Passing & Receiving	.563*	.036	significant
Dribbling	.737**	.003	significant
Shooting	.639*	.014	significant

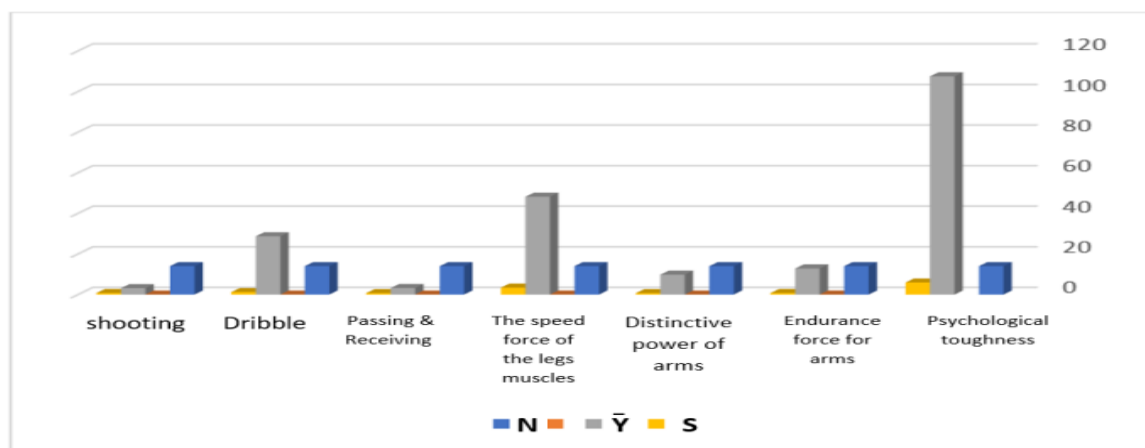


Figure 1. Shows the means and standard deviations in the scale and skill and physical tests

DISCUSSION

Shows the correlation between the PT scale and some compatibility, physical and skill abilities. When a comparison was made between the arithmetic mean of the scale, which amounted to (107.5), and a hypothetical mean of (80), it was found that the members of the research sample of players to whom the scale was applied had a high degree of PT according to the standards of the prepared scale. The researchers attribute the results reached to the nature of the handball game, as the nature of the handball game is a team game in which contact between players is permissible within the limits of the legal rules, in addition to the high physical abilities it requires. It is a high skill performance to obtain the ball, handle it, and aim at the goal. These abilities that are developed as a result of athletic performance, systematic repetitions, and contact with competitors all give players physical toughness in dealing with competitors, which reflects positively on the psychological state of the player, especially PT, toughness may act as an important coping force against the effects of pressure for change (Salehian, 2019), as Hoffman points out that “there is a connection between some compatibility abilities and mental and psychological abilities,” as the player’s ability to exert an appropriate effort for performance requirements is linked to some psychological variables that support the player to continue performing successfully. Whenever the player is supported by motor and physical experiences, it will reflect positively on his psychological state and continue performing with high confidence and high PT, as both (Esfahankalati and Venkatesh) indicate that there is a correlation between the ability to exert

appropriate effort and movement rhythm with the performance of advanced female handball players” (Esfahankalati and Venkatesh, 2013). This is consistent with what (Hassan, 2020) indicated that coordination, physical and skill capabilities “are what make the player more solid and more able to withstand and confront the obstacles and problems that confront him, and to stimulate his latent abilities in all stressful competitive situations, and this is what makes the player more effective in Facing it, because it deals with sources of pressure directly.” In addition, PT has an impact on the player’s perception of events and on the player’s ability to think broadly. This is what (Salman, 2022) pointed out: “PT is the basic element in the process of athletic achievement, and those working in the fields of physical education must benefit from all the influences that affect human behavior and the degree of its severity to find appropriate solutions to them”.

The PT variable is one of the psychological variables that contribute to the athlete’s ability to confront pressures more positively, resolve them, and prevent future difficulties. It is also considered a general personality trait that is shaped and developed by the environmental experiences surrounding the individual.

As for the relationship between PT and the technical performance of basic skills in all sports, the individual, even if his performance is good, is not sufficient in confrontation without PT and the psychological factor, and this is what (Aymen et al., 2012) indicate that he “needs The learner needs PT when he prepares to learn the skills. This is confirmed by (Jassim & Ismail, 2022) that “good performance alone is not sufficient to achieve victory; rather, there are several factors that control obtaining superiority in the match,

including: the level of competition, the surrounding conditions, and the audience” . In addition to the motivation to win, and these are all matters that fall under the name of psychological factors, as the above factors would tip the balance of the match and help the team overcome the competition. As for the other aspects, represented by the compatibility, coordination, physical and skill aspects, they can be controlled and thus developed by the players as a group according to good training based on modern scientific foundations, psychological toughness is one of the important psychological factors that plays an extremely important and vital role in achieving victories and excellence in the sporting field in terms of psychological and physical readiness” (John et al., 2012).

Believe that PT is not only a psychological trait, but it is also mental, physical, and emotional, and means reaching the optimum and maximum performance of your skills. Likewise, problems of psychological toughness can be easily discovered in the sports field, as they clearly appear through frequent objections from players. On the referee’s decisions, or through excessive complaining, objection, and blaming colleagues on the team, as a result of the player being affected by the surrounding circumstances, such as the level of competitors, self-esteem for performance, the atmosphere, the referee, and the audience. By identifying and following up on these behaviors, we can know the extent of the PT of the players and the team (John et al., 2012). In addition, one of the important reasons may be the result of communication between the coach and the players and transferring the coach’s ideas to the players and influencing them as a result of the coach’s possession of emotional intelligence. Therefore, measuring the emotional intelligence of the sports coach reflects positively on the PT of the players (Fouad, 2023). This means supporting the idea of the goal direction that the coach prepares and sets in both directions (performance and result) for the players (Muhammad, 2022), This is consistent with what (Fouad, 2023) indicated which is that it is necessary to measure the competition communication skills between the coach and the player in order to know the coach’s ability to convey feedback to his players, and thus raise psychological toughness in performing the abilities and skills required by the game of handball.

Conclusions

The significant relationship between the PT and the coordination abilities , physical abilities, and performance skills in this study necessitate the need to focus on attention to develop the psychological aspects of the players in order to improve their achievement, and vice versa.

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Conflict of Interest

We declare that this article we wrote is not involved in any conflict of interest.

Ethics Statement

The writing of this article has gone through all ethical procedures related to the academic realm. All the principles of the Declaration of Helsinki were complied, with special emphasis on informed consent and the vulnerability of the study population.

Authors Contribution

Study Design, FMH, MHS, and MF; Data Collection, FMH, MF, and MHS; Statistical Analysis, FMH, MHS, and MF; Data Interpretation FMH, MHS, and MF Manuscript Preparation, FMH, and MHS; Literature Search, FMH, MFA and MHS. All authors have read and agreed to the published version of the manuscript.

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