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# Bulgarian bag exercises and their effect on some physical and motor abilities to develop handball scoring skills

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**Abstract.** The research aims to prepare the Bulgarian bag, identify the effect of the Bulgarian bag to develop physical and motor abilities, and identify the effect of the Bulgarian bag to develop scoring skills. The sample represented (18) junior players for the Iraqi handball team. The researchers used the experimental method to achieve the goal of the research and used the statistical package (SPSS) to process the data statistically. According to the results collected, it was concluded that there was superiority in the post-tests of the experimental sample. The researchers recommended focusing on developing these physical and motor abilities and scoring skills because of their great importance, and conducting research on other samples, levels, and activities.

***Keywords:*** Bulgarian bag, physical abilities, motor abilities, handball scoring.

## INTRODUCTION

Handball is a sport that requires a diverse range of physical, motor, and skill abilities to ensure effective performance at both individual and team levels. It is widely recognized globally as an exciting team game characterized by its speed, frequent scoring, and physical contact. Handball encompasses numerous facets that demand various physical, motor, and skill-related attributes across all levels. Physical and motor aspects such as strength, speed, endurance, agility, and flexibility play pivotal roles in this sport. Among the fundamental skills in handball, scoring stands out prominently. Physical fitness in handball necessitates good bodily strength, particularly in the arms and legs, which are crucial for shooting, passing, and physical confrontations with opponents. Additionally, motor abilities play a critical role in the performance of handball players, encompassing movement and motor control that contribute to enhancing players' efficiency in maneuvering, injury avoidance, accurate shooting, passing, and goal scoring. Hence, handball players need to engage in diverse training routines to enhance these physical and motor abilities and achieve optimal performance in sports.

The Bulgarian bag in sports is a training tool specifically designed to enhance physical fitness and develop motor, muscular, and skill capabilities. This bag was invented in Bulgaria by physical education professor Ivan Ivanov. It consists of a fabric bag filled with sand or other heavy materials, featuring dual handles on the sides for easy gripping. The Bulgarian bag enables athletes to perform a wide range of exercises targeting various muscle groups, physical abilities, and motor skills.

The aim of the research was to develop the Bulgarian bag, understand its impact on enhancing physical and motor capabilities, and skill in handball shooting. The researchers hypothesized statistically significant differences in Bulgarian bag exercises for developing physical and motor capabilities and handball shooting skill.

Among the studies addressing the study variables,( Mahmoud ,2016) aimed to investigate the effect of Bulgarian bag exercises on certain physical variables (dynamic balance, grip strength – right and left, back and leg muscle strength) and the 100m butterfly swimming level. The researcher employed an experimental approach suitable for the research and its procedures, using a pre-posttest experimental design with two groups – experimental and control. The research sample consisted of intentionally selected junior swimmers from the Sun Sports Club registered with the Egyptian Swimming Federation during the 2014-2015 training season, with a

sample size of 24 athletes. The main findings indicated that Bulgarian bag exercises improved dynamic balance, back, and leg muscle strength, leading to enhanced performance in the 100m butterfly.

(Hussein and Ali Hussein Ali's study ,2021) identified the problem of lacking a comprehensive map for predicting strategic offensive behavior among junior handball players. Their study aimed to establish standardized levels and degrees for physical, motor, skill, and mental abilities among youth handball club players in Middle Euphrates Governorates. The researchers used a descriptive methodology and included a research community of 421 players, adopting a comprehensive survey method. To achieve the study objectives, a battery of tests for physical, motor, and skill abilities was employed. The researchers concluded by proposing standards and defining levels for physical, motor, skill, and mental variables as an evaluation and interpretative tool reliable for assessing players' performance levels. Recommendations included conducting similar or complementary studies encompassing cognitive, psychological, and physiological aspects.

(Saleh and Ahmed's study ,2022) aimed to develop an educational program using the paired-comparison competitive method to enhance key motor skills and learn offensive skills and motor behavior among students playing handball. The study also aimed to identify motor skills, offensive skills, and motor behavior among handball students. The research assumed statistically significant differences between the control and experimental groups in using the paired-comparison competitive method to develop motor skills and learn offensive handball skills in subsequent tests, favoring the experimental group.

The study conducted by (Alawi and Al-Nafakh ,2021) aimed to investigate the influence of cooperative competition on the development of selected physical capabilities and individual quick attacks in handball among female students. The researchers utilized an experimental methodology to address the research problem. The research population consisted of third-year students majoring in Physical Education and Sports Sciences at the College of Education for Girls, University of Kufa, during the academic year 2020-2021, totaling 35 students. From this population, a sample of 20 students was randomly selected using lottery sampling, with each sample comprising 10 students.

The key findings indicated that the cooperative competition style had a positive impact on enhancing certain physical capabilities and individual quick attacks in handball among female students. The study's recommendations included the development of educational curricula tailored to the students' levels of physical, motor, and skill capabilities. Furthermore, the study proposed conducting similar research across different age groups, sports, and various physical and motor skills not covered in the current study. The study also highlighted the importance of objective assessment tests in evaluating and improving both general and specific physical and motor skills, identifying strengths and weaknesses, and thereby enhancing athletic performance.

The study by (Nasser and Salman ,2023) aimed to provide standardized and objective tests to measure the endurance of advanced handball players' performance (defensive-offensive) skills. These tests are designed to mimic gameplay performance and serve as precise indicators for describing and diagnosing physical and skill-related conditions, especially upon players' return from injuries. Establishing criteria and standards for these tests ensures an accurate assessment for coaches to build and evaluate training programs tailored to players' levels. This contributes to empowering the selection and classification of qualified players for forming optimal teams, thereby enabling them to reach higher levels of competition in international tournaments.

Based on the results, the researcher presented several conclusions and recommendations. Among the findings from the conducted and discussed tests, the researcher concluded the following: providing objective and standardized tools (tests) to measure the endurance of performance skills for players in the premier handball league, with the designed tests having the ability to distinguish between players. Key recommendations included adopting the designed tests for physical assessments according to achieved levels, utilizing them to regulate training units, and incorporating these tests in player selection for competitive matches.

Furthermore, the study by (Al-Jubouri and Abdul-Husay ,2022) underscored the importance of utilizing Battle Rope exercises to develop muscle strength, agility, and the performance level of shooting accuracy from jumping in handball. Shooting accuracy is noted for its ability to increase excitement among both players and audiences, with proficient shooters displaying significantly higher self-confidence. The researcher observed a scarcity of modern training methods tailored for youth, emphasizing the need for diversified training approaches to achieve optimal results. Consequently, the researcher undertook an experimental approach using a controlled and experimental group design with pre- and post-tests. The research sample consisted of young athletes from Al-Kufa Sports Club. The presentation, analysis, and discussion of results revealed a significant impact of Battle Rope training on enhancing the research variables among the experimental group.

Meanwhile, the study by (Al-Suhr, Rady, and Yas ,2016) aimed to explore the relationship between specific strength-speed abilities of arm and leg muscles and the accuracy skill of frontal jumping shooting among handball players within the research sample. The research hypotheses suggested a statistically significant correlation between these variables among the sample of handball players. Recommendations included selecting appropriate tests for physical capabilities and motor skills, whether defensive or offensive, and emphasizing further field

studies on different samples to record the quality of relationships in variables beyond those studied to ascertain the nature of correlational relationships linking these variables.

## Materials and methods

The sample consisted of (18) players from the national handball team, with (4) players excluded due to absence. The researchers employed a single-group experimental design to achieve the research objective.

The researchers utilized the following tests:

1. Stability Shooting Test (Atwan, 2022)
2. Medicine Ball Throw Test with a weight of (2) kg to measure arm explosive power (Kazem and Hussein, 2014)
3. Specific Arm Strength Test (Kazem and Hussein, 2014)
4. Zigzag Run Test with dimensions of 4.75m length and 3m width to measure agility (Saleh and Ahmed, 2022)
5. Short-Range Defensive Movements Test (frontal, rear, lateral) to measure transitional motor response speed (Al-Zuhairi and Jabr, 2018)

Additionally, they employed Statistical Package for the Social Sciences (SPSS) for statistical data processing, including:

- Mean
- Standard deviation
- Independent samples t-test

## RESULTS

Table 1, The arithmetic means, standard deviations, computed (t) value, error level, and significance of differences between the research groups are shown.

| Variables | Pre-test | | Post-test | | Calculated t Value | Error level (Sig) | Significans |
|---|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | | | |
| **Explosive Strength** | **2.92** | **0.64** | **3.70** | **0.45** | **2.89** | **0.000** | **significant** |
| **Speed specific strength** | **11.37** | **1.26** | **12.67** | **1.48** | **8.432** | **0.000** | **significant** |
| **Agility** | **17.55** | **0.09** | **16.60** | **0.07** | **2.15** | **0.001** | **significant** |
| **Accuracy in Shooting** | **6.998** | **0.853** | **8.125** | **0.923** | **2.696** | **0.001** | **significant** |

## DISCUSSION

From Table 1, significant differences are observed in explosive strength, speed-specific strength, agility improvement, and shooting accuracy among handball players. Researchers attribute this improvement to physical and kinetic development, as well as the inclination of these activities towards physical and kinetic abilities essential for optimal achievement. Explosive strength represents the maximum force muscles can produce in minimal time and is crucial in handball for shooting, jumping, defensive maneuvers, and feints (Daraa, 2023). Therefore, it is imperative to focus on diverse physical training exercises and specific drills to enhance explosive strength, as noted by (Kazem, 2014, p. 219), and (Farhan and Abdul-Rida, 2019) highlight its pivotal role in most athletic activities.

According to (Hamid, 2009, p. 182), speed equates to power, which is vital for executing most sports skills, necessitating high levels of muscular strength, speed, and motor skill proficiency, synergizing strength and speed (Alaa Al-Din, 2015, p. 9). Researchers emphasize the use of weight training exercises due to their critical role in developing motor skills, including speed-specific strength, as also mentioned by (Tamimi and Zghair, 2010, p. 96). Developing explosive strength and rapid capacity contributes significantly to agility development, as agility's elements include capacity, crucial for optimal performance (Al-Zuhairi and Jabr, 2018, p. 11).

## CONCLUSIONS

Based on the collected results, players demonstrated superior performance in post-test evaluations due to enhanced physical and motor capabilities, positively impacting their shooting skills in handball. Researchers recommend focusing on developing these crucial abilities and conducting further research on different samples, levels, and activities.

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