

# A Weight Training Program And Its Effect On Increasing The Muscular Ability Of Futsal Players

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## Abstract

**Background.** The development of muscular ability represents a fundamental component in improving the physical performance of futsal players, as the nature of the game requires high levels of explosive strength and rapid force production within limited spaces and short time intervals.

**Purpose.** This study aimed to identify the effect of a weight training program on increasing the muscular ability of futsal players.

**Materials and Methods.** The study employed an experimental approach using a one-group design with pre- and post-tests. The research sample consisted of 10 futsal players from the University of Wasit team, while two players participated in the exploratory study. A weight training program was implemented for eight weeks with three training sessions per week. The research variables included absolute muscular ability of the legs, vertical jump from standing, and standing long jump. Data were analyzed using arithmetic mean, standard deviation, t-test, and percentage change.

**Results.** The results showed statistically significant improvements between the pre- and post-measurements in all research variables in favor of the post-tests. The percentage of improvement reached 59% in absolute muscular ability of the legs, 53% in the vertical jump test, and 61% in the standing long jump test, indicating the effectiveness of the training program in developing muscular ability.

**Conclusions.** The weight training program demonstrated a significant positive effect on enhancing the muscular ability of futsal players. The study recommends incorporating structured weight training programs within the physical preparation of futsal players, while carefully controlling training loads and intensity to maximize performance development.

**Keywords:** Weight Training, Muscular Ability, Futsal, Explosive Strength, Physical Fitness.

## 1. Introduction

Since the ages, the game of football, its development and discoveries, requires all the physical elements, some for skill performance and some for physical performance, so it needs major training operations, and through what practically requires training to develop its methods, many programs have been created for football players (futsal).

One of the most important elements of physical fitness that an athlete in general needs, and a football player in particular, is muscular ability, as defined by (Zaki 2007) as the ability of the body's muscles to generate an amount of force in a period that may be somewhat short or moderate depending on the activity practiced.

The work on developing the muscular ability of the athlete's body comes through special exercises that work to raise the muscular strength of the body through their effect on the muscle tissue and increasing their density because these exercises work to expand the cells and build muscles, and the benefit of building this type of muscle gives more flexibility to the athlete and reduces The athlete's vulnerability to sports injuries, in addition to the general shape of the body.

Weight training is one of the basics of preparing football sports programs because it works to develop all elements of comprehensive physical fitness and muscular strength in particular. Such exercises also work to raise physiological efficiency to give the individual high efficiency when performing any physical effort.

Both (Silvestre & Trandei 1976) point out that the progress that occurs in the level of football players is the result of performing weight training programs to increase the strength component, including (strength endurance - maximum strength - strength endurance).

It can also be mentioned that football skills, such as shooting, require special muscular ability compared to other skills, as they require hitting the ball in proportion to the skill performance in hitting the ball, and this comes from codifying special training programs that can be worked on to increase the player's muscular ability, as mentioned, to perform this specific skill. What coaches work on to develop muscle strength.

The game of football (five-a-side) and the advantages it possesses over other sports as a team and with spaces that are not large therefore requires a special requirement for the player that can distinguish him from other sports due to the direct contact with the opponent as well as its need for muscular ability that can perform in a specific or short period of time. Therefore, the five-a-side football coaches focused on physical preparation programs with weightlifting to enable the player to reach the desired level.

### **Research problem:**

The researcher has been a five-a-side football player for a period of time and has knowledge of the training programs in which five-a-side football coaches work. Therefore, he found that there is a major deficiency in developing the players' muscular ability, through which he weakens in some of the skills that the player needs. Therefore, the researcher worked on preparing a weight training program that could Through it, muscle performance increases from a physical and physiological perspective, which in turn works to raise the overall level of the futsal player.

### **Research objective:**

- Identifying the effect of a weight training program and its effect on increasing the muscular ability of futsal players.

### **Research hypotheses:**

- There are statistically significant differences in the effect of the weight training program and its effect on increasing the muscular ability of futsal players.

## **2. Methods and Materials**

The researcher used the one-group experimental method, to which pre-measurement and post-measurement were applied to suit the nature of the research

### **Community and sample research:**

The sample was chosen intentionally from the players of the University of Wasit futsal football team, which numbered only 12 players. (10) Players were selected for the basic study and two players for the exploratory study.

Table (1) shows the characteristics of the basic study sample.

Variables	Measuring unit	Mean	Std. Deviations	T value calculated	Level Sig
Length	Cm	152.12	6.21	0.625	0.421
Age	Year	20.32	1.14	0.457	0.745
Weight	Kg	69.47	8.35	6.75	0.587

\*Statistically significant at the level (0.05)

It is clear from Table No. (1) that shows the characteristics of the research sample for both the mean and deviation of the research sample, as well as the calculated T and the function level.

### **Study tools:**

#### **Weight training program**

The proposed training program was implemented for two months (8 weeks), divided into (3) weekly training units

#### **Search metrics:**

- The absolute muscular ability of the legs
- Vertical jump from a standing
- Long jump from standing position

#### **Exploratory experience:**

The exploratory experiment was conducted on 24-26/12/2023 in order to prepare the tested players for the test, as well as to identify the most important obstacles that could accompany the testers and address them.

#### **Pre-measurement:**

Pre-measurements of the research sample were conducted on 27/12/2023, after the completion of the exploratory study.

### Post-measurement:

The post-measurement was conducted on 22/2/2024, immediately after the implementation of the weight training program.

### Utilities in the program application

- Measuring tape to measure length
- Medical scale
- Stop Watch
- Different free weights
- Weight lifting machines

### Statistical methods:

- Arithmetic mean.
- standard deviation.
- T test.
- Percentage change.

### 3. Results

Variables	Measuring unit	Pre-measurement		Post-measurement		Lux value	Percentage of change	level Sig
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation			
The absolute muscular ability of the legs	watt	4215.02	845.23	5324.14	932.74	0.096	%59	0.000
Vertical jump from a standing	cm	49.35	11.25	53.74	12.47	0.132	%53	0.000
long jump from a standing	cm	213.7	32.47	235.21	35.65	0.074	%61	0.000

**\*Significance level (0.05)**

Through the objectives set on the effect of weight training on the muscular ability of five-a-side football players and whether it can be an effective training exercise or not. By imposing the research on the possibility that the training program can have a positive effect on muscular ability or be negative, so through discussing the tests for the research (absolute muscular ability of the legs - the vertical jump from standing - and the long jump from standing) it was noted that there is a clear difference between The pre-measurement and post-measurement in the percentage of change for each of the tests of muscle ability and strength to perform, where both obtained (59% in the absolute muscular ability of the legs - 53% in the vertical jump - and 61% in the standing long jump) and this difference is clear with regard to the percentage This change is consistent with the study of (Ahmed Sharaf, Ezz El-Din Khaled 2003) that weight training works to raise muscular efficiency, which in turn works to raise physiological efficiency, thus raising the athlete's physical level in general and muscular ability in particular.

This study also agreed with the study of (Abdel Dayem Muhammad , 2005), which proved that weight training at all age levels is an essential part of the training process and developing training programs because it works directly to raise the level of muscle tissue in addition to changing the general shape of the body. It also works to build Muscle for all age groups to protect against the risk of sports injury.

In this context, **Suchomel, Nimphius, and Stone (2016)** indicated that strength and resistance training directly contribute to improving force production and muscular power by enhancing neuromuscular efficiency and increasing the rate of force development, which positively reflects on athletes' motor performance. Similarly, the study by **Cormie, McGuigan, and Newton (2011)** demonstrated that strength and power training programs lead to significant improvements in vertical jump tests and the muscular power of the legs as a result of neuromuscular adaptations produced by regular resistance training.

The results of the present study are also consistent with the findings of **Loturco et al. (2015)**, who reported that strength training using weights significantly contributes to improving performance in both vertical and horizontal jump tests among soccer players, due to the enhancement of the ability to generate force in both vertical and horizontal directions. This is further supported by **Comfort, Stewart, Bloom, and Clarkson (2014)**, who indicated that developing the muscular power of the legs through resistance training leads to improved performance in motor skills that rely on explosive strength, such as jumping, sprinting, and acceleration.

Accordingly, it can be stated that the noticeable improvement in the muscular power variables of the research sample can be attributed to the nature of the weight training program used, which provided appropriate training loads that contributed to positive neuromuscular adaptations among the players, leading to the development of muscular power and improvement of their physical performance. These findings highlight the importance of incorporating weight training programs within the physical preparation of futsal players due to their effective role in developing the physical fitness components associated with skill performance.

#### 4. Conclusions

- The weight training program led to the development of relative muscular ability.
- The weight training program led to the development of the horizontal vertical jump for futsal players.
- There is a statistically significant difference between the pre-measurement and the post-measurement in all variables, with a clear percentage of change for futsal players.

#### 5. Recommendations:

- Implementing a weight training program for futsal players
- When applying the program, attention must be paid to the training loads and their intensity
- Distributing such research to all five-a-side football clubs.

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## Appendixes

### Physical tests used

#### Vertical jump from a standing

- Purpose of the test: To know the measurement of the muscular ability of the legs in a vertical direction
- Tools :
  - A wall of appropriate height.
  - Smooth floor.
  - Chalk for marking.
- Performance method:
  - The player stands next to the wall with one of his feet facing the wall. The feet are spread chest-width apart with the joints fully extended.
  - The tester raises his hand and points at the wall
  - The tester jumps up and places a mark on the wall
- Degree calculation: The distance between the first mark and the second mark is calculated as approximately (1) cm, and each laboratory is given (3) referrals

#### Long jump from a standing

- Purpose of the test: to measure the muscular ability of the legs
- Tools:
  - Smooth floor to prevent slipping
  - Measuring tape
  - Starting line
  - Chalk
- Performance description
  - The tester stands behind the starting line with his feet parallel.
  - Swinging the arms by the laboratory while jumping forward.
  - Each laboratory has three attempts, and the best attempt is credited to it.

- Degree calculation: The distance of the jump is measured from the starting line to the last part of the body closest to the starting line (Muhammad Sobhi Hassanein, 1995).

Measuring absolute muscle ability

$$\text{Muscular ability} = (60.7) \times \text{Vertical jump distance} + (45.3) \times \text{Body mass} - (2055)$$

### Training module template

	Day	Exercise	Sets	repetitions	Intensity %	Rest	Time to perform
First Week	Sunday	Up the stairs	3	6	%80	1min	5min
		Raise the two obstacles	3	6	%80	1min	5min
		Lifting weight while walking	3	6	%80	1min	6min
		Pushing a weight with both legs	3	6	%80	2min	6min
		A colleague carried	5	6	%80	2min	7min
		Push a fixed weight	5	6	%80	1min	7min
		The device raises and lowers the leg	5	6	%80	2min	5min