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The Effect of Integrated Health Fitness Programs on Improving Physical Performance and Injury Prevention in Handball Players

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ABSTRACT

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Keywords:
Fitness, Handball, Injury Prevention, Physical Performance, Integrated Training.

Research Summary

The aim of this study was to identify the impact of integrated health fitness programs on improving physical performance and preventing injuries in handball players. The researcher used the quasi-experimental method, and an intentional sample of (30) young players was selected, divided into two groups: an experimental woman who underwent an integrated health fitness program, and a control group who underwent the usual training program. The program was extended for 8 weeks, with 3 units per week. The results showed that there were statistically significant differences in favor of the experimental group in all elements of physical performance (strength, speed, flexibility, endurance), and a significant decrease in the rate of injuries was recorded compared to the control group. The study recommends the adoption of these programs within the training plans because of their role in enhancing the efficiency of the player and preventing him from injuries

1-1 Introduction and Importance of the Research:

1- Introduction:

Healthy fitness is a modern concept in sports science, which aims to achieve a balance between physical fitness and the overall health of athletes, with a focus on preventing injuries and enhancing physical and functional performance. Handball is a team sport that requires high levels of strength, speed, flexibility, and endurance, exposing players to physical and psychological stressors that affect their performance and increase the likelihood of injuries. (2018.Buzzichelli,c)

Hence, the importance of implementing integrated health fitness programs that combine therapeutic exercises, proper nutrition, rest, and muscular recovery is highlighted, in a way that reflects positively on the performance of players and protects them from recurrent injuries. Therefore, this research came to highlight the impact of these programs on improving physical performance and preventing injuries in handball players, in an effort to develop modern training programs according to an integrated scientific method. (2020(Kibler,w,

1-2 Research Problem:

A large number of handball players suffer from low health fitness as a result of excessive focus on the skill and physical aspects, without enough attention to the health and rehabilitation aspect. This leads to recurring injuries, reduced performance, and increased physical exhaustion. The main problem is the lack of integrated health fitness programs within the daily training plan, which limits opportunities for developing athletic performance and increases the physical and mental burden on the player.

1-3 Research Objective:

The research seeks to achieve the following objectives:

1. Identify the impact of integrated health fitness programs on improving the physical fitness elements of handball players.

2. Reveal the effectiveness of these programs in reducing the rates of sports injuries.

3. Providing scientific recommendations on integrating health fitness programs into training plans.

1-4 Research Hypotheses:

1. There are statistically significant differences between pre- and post-measurements in the physical performance of handball players in favor of post-measurements.

2. Integrated health fitness programs reduce the rates of sports injuries among handball players.

1-5 Research Areas:

1.5.1 Human Field: First Division Clubs in Dhi Qar 2024-2025

1.5.2 Spatial Field: Handball Stadiums and Halls – Dhi Qar.

1.5.3 Temporal Domain: Period from 7-10-2024 to 7-2-2025.

1-6 Definition of the terms contained in the research:

1.6.1 Integrated Health Fitness Programs:

A range of physical exercises and activities aimed at promoting physical fitness and overall health, including strength training, flexibility, balance, injury prevention, and nutrition.)2006, faude,o)

1.6.2 Physical Performance:

The ability of a player to efficiently implement physical and skill skills during handball matches, including strength, speed, endurance, and flexibility. (2005,(Reilly,t

1.6.3 Injury Prevention:

A range of interventions aimed at reducing the incidence of sports injuries, through preventive and therapeutic exercises and proper training.2009),ziv,g)

3- Research methodology and field procedures:

3-1 Research Methodology:

The researcher adopted the experimental method, due to its suitability to the nature of the study, which seeks to reveal the effect of a training program (integrated health fitness program) on physical performance and injury rates among handball players.

3-2 Research Population and Sample:

The research population consists of handball players within the youth category (age group 17-21 years) in a number of sports clubs in Dhi Qar, who regularly participate in local competitions., An intentional sample of (30) players from the study population was selected, randomly divided into two equal groups:

• Experimental group (15 players): Underwent the implementation of the Integrated Health Fitness Program.

• Control group (15 players): Underwent the traditional training approved by the club.

The homogeneity of the sample in terms of (age, weight, height, years of practice) was confirmed using appropriate statistical treatments.

3-3 Research Tools:

The following tools were used in data collection:

First: Physical Fitness Tests (Pre and Post):

1. Vertical Jump Test – to measure explosive force.

2. 30 meter running test – to measure speed.

3. Sit and Reach Test – to measure flexibility.

4. Test your abdominal exercises in 30 seconds – to measure muscular endurance.

Second: Sports Injuries Form:

A form designed to count and document the types of injuries, their severity and frequency during the research period, under the supervision of a physiotherapist.

3-4 Research Procedures:

Use the Pilot Program (Integrated Health Fitness Program):

The program was designed based on modern principles in sports training and injury prevention, and its application extended for 8 weeks, with 3 training units per week, and included:

• Dynamic warm-up and recovery exercises.

• Strength and muscular endurance training.

• Balance and stability exercises.

• Injury prevention exercises (e.g., stretching and flexibility exercises for the joints and muscles most prone to injury).

• Short nutrition and health education sessions.

3.5 Statistical Methods:

The data were processed using SPSS statistical software, according to the following methods:

• Mean and standard deviation: to describe the data.

• T-test for independent samples: to measure the differences between the two groups (experimental and control).

• T-test for associated samples: to compare the results of the experimental group before and after application.

The level of statistical significance ($\alpha \leq 0.05$) was adopted in the interpretation of the results..

3-6 Research Controls:

• The stability of the training environment for both groups.

• Timeliness commitment to the implementation of the program.

• Supervising a specialized trainer and physical therapist on the program to ensure the accuracy of implementation.

• Players are obligated not to engage in additional activities that affect search results.

3.7 Variables:

• Independent variable: Integrated health fitness program.

• Dependent variables:

• The level of physical performance (strength, speed, flexibility, endurance).

• The number, type and severity of injuries recorded during the research period

4. Present, analyze, and discuss the results

4.1 Presentation and analysis of results

4.1.1 Presentation of Physical Performance Results:

Table (1)

Physical performance results show before and after tests

Significance	T-test	Next Intermediate	Tribal average	Physical Testing
0.001	5.24	46.7	38.2	Vertical Jumping
0.002	4.88	4.76	5.14	Running 30m
0.001	6.01	27.9	21.3	Sitting Bending Test
0.001	5.66	33.4	25.1	Abdominal exercises

After the implementation of the experimental program, the results of the physical performance tests showed that there were statistically significant differences between the experimental and control groups, in favor of the experimental group, as it is clear from the table above that the program led to a significant improvement in explosive strength, speed, flexibility, and muscular endurance. These findings suggest the effectiveness of incorporating healthy fitness elements into the development of physical performance.

4.1.2 Presentation of the results of sports injuries:

Table (2)

Shows the results of sports injuries: The number of injuries was recorded during the study period for both groups

Control Group	Experimental Group	Type of Injury
7	2	Muscle strain
4	1	Joint twisting
2	0	Minor muscle tear
3	0	Repeated injuries
16	3	Total

The table above shows a significant decrease in the number of infections in the experimental group, which shows that the program has contributed to:

• Improve muscular and joint flexibility.

• Strengthening the muscles supporting the joints.

• Increase the awareness of players about prevention and nutrition.

4.2 Discussion of the results

First: Improving Physical Performance:

This improvement is consistent with what Bompa & Buzzichelli (2018) pointed out that the integration of integrated exercises (strength, flexibility, recovery) into training programs effectively contributes to raising the efficiency of performance in players.

Reilly & Ekblom (2005) also asserts that programs that include a balance between load and rest contribute to accelerating recovery and improving the overall performance of the athlete.

Second: Prevention of Injuries:

The results are consistent with Kibler et al. (2020) that injury prevention requires targeted training programs to enhance joint flexibility, strengthen weak muscles, and improve balance, which is adopted in the current program.

Thus, the low rate of infections is a strong indicator of the effectiveness of integrated health programs, especially in physical contact sports such as handball.

5 – Conclusions and Recommendations:

5.1 Conclusions:

1. Integrated health fitness programs have been shown to be highly effective in improving physical performance (strength, speed, flexibility, endurance) in handball players compared to traditional programs.

2. The program has effectively contributed to reducing the number of sports injuries, both in terms of frequency and intensity, as a result of the integration of prevention, balance and recovery exercises within the program.

3. The study proved that the development of healthy fitness is not limited to the physical aspect only, but requires an integration of exercise, nutrition, rest, and health education.

4. The existence of statistically significant differences in favor of the experimental group confirms the effectiveness of integrating the components of health fitness in the daily training program of handball players.

5. The results of the program can be generalized to similar age groups, with relative adjustment in time loads and intensity according to the level of the player.

5.2 Recommendations:

1. Include integrated health fitness programs in the training plans approved in sports clubs, especially for team teams such as handball.

2. Training trainers and physical therapists to design preventive and rehabilitation programs within the training sessions, especially in the competitive stages.

3. Conduct similar studies on other sports that rely on high physical strength (e.g. football, basketball, wrestling) to verify the effectiveness of these programs in reducing injuries and improving performance.

4. Paying attention to the nutritional awareness aspect and psychological comfort within the training programs, as they have a direct impact on promoting physical recovery and reducing stress.

5. Providing the necessary tools and equipment in the clubs to implement muscular recovery programs and injury prevention exercises (such as balance tools, Swiss ball, stretching machines).

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