

Training at a Temperature of (34_36) and its Effect on Strength Endurance in Fitness Practitioners Aged (30-40 Years)

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Abstract:

The research at a temperature of (34_36) and its effect on strength tolerance in fitness practitioners aged (30-40) years, and to identify the effect of the training curriculum on the development of strength tolerance in fitness practitioners aged (30-40) years old, and to identify the effect of the training curriculum on the development of strength tolerance in fitness practitioners aged (30-40) years.

In order The researcher selected a number of fitness practitioners aged (30-40) years and their number (10) trainees from the trainees at the Queen's Hall in Waziriya who showed their willingness to commit to fitness training after explaining the nature of the curriculum that will be applied to them that the training curriculum with a temperature of (34_36) contributed to the development of the quality of strength tolerance for members of the research sample.

The researcher recommends the need to (pay attention to training at high temperatures, especially for people who want to lose weight and reduce the proportion of the lipid component), apply the high temperature training curriculum to athletes of different games and levels, and use high temperature training to develop physical abilities, especially those characterized by endurance.

Chapter One

1- Introduction to the research:

1.1 Introduction and importance of the research:

The environment has an impact on humans in various aspects of their lives, whether this impact is physical, functional or muscular, as the human body is constantly exposed to changes in the external

environment, and the most important of these changes are temperature changes, whether high or low, which affect the body temperature, and consequently the vital processes for the body to maintain a constant temperature.

The process of temperature stabilization is an important biological process for the human body. In some circumstances, the body temperature can rise or fall as a result of changes in the external environment and the insufficiency of the body's thermostats to defend it against these changes (Aboulela Ahmed Abdel Fattah, 2003, 497).

Many studies have confirmed that the environment has a direct relationship with the physical and functional fitness of the individual, so these changes that occur during training in different environments create a kind of adaptation to these conditions, and it is known that the practice of sports activities is affected by different conditions and therefore these conditions must be considered and studied for the correct planning in the application of sports training methods based on scientific foundations, which is a positive manifestation of the studying the changes that occur in women practicing sports when training at a temperature of (34_36) and knowing its effect on strength endurance and weight loss to know the physical development caused by this environment.

1.2 Research Problem:

The ambient temperature is one of the important matters and crucial influences on the human body, as the ambient temperature plays an important role in influencing physical work as one of the variables that are sometimes positive and sometimes negative, researcher's access to scientific sources and inquiry from some specialists in the field of sports training, as well as the fact that the researcher is one of the specialists in physical fitness training, she did not get an adequate answer regarding which is better to train in low temperature or high temperature and its effect on the development of endurance and its impact on physical work. As the researcher is one of the specialists in fitness training, she did not get an adequate answer regarding which is better training at low temperature or high temperature and its effect on the development of endurance and its effect on body components (fat, muscle mass, fluids and weight), so the researcher conducted this research to try to answer the following question:

- Does training at a temperature of 34-36 degrees Celsius have an impact on the development of strength endurance and its effect on somebody components and weight.

1-3 Research Objectives:

1. Developing a training curriculum at a temperature of (34_36) and its effect on strength endurance in fitness practitioners aged (30-40) years.
2. curriculum on the development of strength tolerance in 30-40 year old female fitness practitioners.

1.4 Research hypothesis:

- There are statistically significant differences between the pre- and post-tests in the development of strength tolerance in 30-40 year old female fitness practitioners.

1-5 Fields of research:

1.5.1 Human Subjects: A sample of fitness practitioners aged (30-40) years and their number (10) trainees at Queen's Hall in Baghdad_Waziriyah.

1.5.2 Temporal domain: From (23/6/2024) to (7/9/2024).

1.5.3 Spatial area: Queen Fitness Hall in Baghdad_ Waziriya

Chapter Two

2- Research methodology and field procedures:

2.1 Research Methodology:

The researcher used the experimental approach with pre and post-testing to suit the research problem.

2-2 Research population and sample:

A number of fitness practitioners aged (30-40) years and their number (10) trainees were selected from the trainees at Queen's Hall in Waziriyah who expressed their willingness to commit to fitness training after explaining the nature of the method that will be applied to them.

2.3 Means of data collection and instruments used in the research:

2.3.1 Means of data collection:

- ✓ Arabic and foreign references and sources.
- ✓ Personal interviews.
- ✓ Examination form.
- ✓ The World Wide Web (Internet).
- ✓ Tests and measurement.
- ✓ Exploratory experiment.

2.3.2 Tools and instruments used in the research:

- ✓ Adjustable ruler.
- ✓ Folding and unfolding carpet.
- ✓ Fabric tape measure for measuring height.
- ✓ Iron bar of Swedish origin (4).
- ✓ Iron weights (1, 4, 2.5, 5, 10, 15, 20) kg.
- ✓ Bar braces (4).
- ✓ (2) Japanese-made CASIO electronic stopwatches.
- ✓ Laptop (hp).
- ✓ Treadmill (Tread mail) type (life fitness) (2).
- ✓ (6) Heating and cooling devices (LG) of Chinese origin.
- ✓ 8 fans (Toshiba) of Chinese origin (10).
- ✓ Thermo thermometer of Japanese origin.

2-4 Field research procedures:

2.4.1 Tests used in the research:

Firstly, the strength endurance test for the arms:

- **Test name:** Flexion and extension test of the arms from the resting position (60) Tha (Muhammad Subhi Hassanein, 1987, 176).
- **Instruments used:** Stopwatch, whistle, recording form.

- **Test Procedure:** The tester takes a frontal resting position on the floor so that the body is in an upright position. At the start signal, the tester flexes and extends the arms fully, and continues to repeat as many repetitions as possible without stopping for (60) seconds.
- **Scoring:** The tester's score is the number of correct (60) seconds.

Second: Abdominal strength endurance test:

- **Test Name:** Sitting test from lying down to **fatigue (Mohammed Sobhi Hassanen, 1995, 179).**
- **Instruments used:** Stopwatch, whistle, recording form.
- **Test Procedure:** lies on his/her back with his/her feet 30 cm apart, hands clasped behind the head, on hearing the whistle, the tester begins to bend the trunk to reach a sitting position with the knees bent, and the exercise is repeated quickly without stopping until fatigue sets in.
- **Scoring:** The tester's score is the number of correct

Third: Strength endurance test for the trunk:

- **Test Name:** Trunk lift test on an inclined plane to limit fatigue (**Muhammad Subhi Hassanen, 1995, 211).**
- **Tools used:** Stopwatch, , registration.
- **Test Procedure:** a bent-over an inclined plane and attempts to raise the trunk to a straight position, continuing to repeat the performance for as many repetitions as possible without stopping until fatigue sets in.
- **Scoring:** The tester's score is the number of

Fourth: Strength endurance test for legs:

- **Test Name:** Half-squat jumping (**Mohammed Sobhi Hassanein, 1995, 381).**
- **Objective of the test:** To measure the dynamic muscular endurance of the leg muscles.
- **Equipment:** Adjustable bench, chair, folding and unfolding mat.
- **Test Procedure:** An assistant adjusts the height of the bench or chair so that it is parallel to the height of the lower patella (knee) of the tester, then the tester turns away from the chair, so that the back is facing the chair with hands clasped behind the head, placing one foot slightly forward, while straightening the legs and maintaining the position of the feet, and the tester squats low and then jumps with the feet up, and the exercise is repeated as many times as possible.
- **Scoring:** A point is scored for each correct attempt up to the point of fatigue.

2.4.2 Exploratory experiment:

the validity and suitability of the tests for the research sample at Queen Fitness Hall in Baghdad_ Waziriya on Sunday 23/6/2024, and the second exploratory experiment to find out the suitability of physical exercises for the research sample and extract the maximum intensity of each tester in all exercises used as well as adjust the temperature at Queen Fitness Hall in Waziriya on Monday 24/6/2024

2.4.3 Pre-testing:

pre-test on Wednesday, 3/7/2024, on the research sample at the Queen's Fitness Hall in Baghdad_ Waziriya, after the temperature of the hall was set between (25-28) degrees Celsius.

2.4.4 The main experiment:

The researcher prepared a training curriculum for the development of strength endurance and applied to the research sample of (10) female trainees and training at a temperature of (34-36) Celsius, and the temperatures were adjusted by cooling and heating devices by running them three to four hours before the training unit until they reach the required temperature and using the thermometer to stabilize the temperature and the curriculum was applied in the Queen's Fitness Hall in Baghdad_ Waziriya, the duration of the curriculum was (10) weeks with (3) training units per week or (30) training units during the curriculum and the intensity ranged between (50% - (80% - 80%) of the maximum capacity of each trainee, and the training unit includes ten exercises for the arms, chest, torso, abdomen and legs as well as endurance exercises for the period from 6/7/2024 to 11/9/2024.

2-4-5 Post-tests:

pre-test on Saturday 7/9/2024 on the research sample at the Queen's Fitness Hall in Baghdad_ Waziriya, after the temperature of the hall was set between (25-28) degrees Celsius.

2-5 Statistical Methods:

The researcher used the following statistical systems:

- ✓ the ready-made statistical package (IBM.SPSS.Ver20) to obtain the following:
- ✓ Arithmetic mean.
- ✓ Standard Deviation.
- ✓ Coefficient of variation.
- ✓ t-test for correlated samples.

Chapter three

3- Presenting, analyzing and discussing the results:

3.1 Presenting, analyzing and discussing the results of the research tests:

Table (1) Arithmetic means, standard deviations, difference of arithmetic means, standard deviation, calculated t value and significance of differences between the pre and post tests in the physical variables

Significant	Error Level	t-value Sig. (p)	SD of Differences	Mean Difference	Post-Test		Pre-Test		Variable
					+d	s	+d	s	
Significant	0.000	12.695	3.313	14.875	2.976	28	1.726	13.125	Arm Strength Endurance
Significant	0.000	20.551	3.870	28.125	2.445	46.625	1.927	18.5	Abdominal Endurance
Significant	0.000	13.067	3.814	17.625	3.464	33	1.060	15.375	Trunk Strength Endurance
Significant	0.000	16.111	14.461	82.375	12.267	137.75	8.927	55.375	Lower Body Endurance
• Statistically significant at a 0.05 significance level with 9 degrees of freedom .									

used in the research, which was focused on allocating two exercises for each of the four muscles as well as a speed endurance exercise and an endurance exercise, in addition to the were aimed at developing these abilities, as each of these exercises worked to increase the body's ability to resist fatigue, by imposing training loads on the body that lead to the occurrence of the adaptation process. Exercises to increase the body's ability to resist fatigue, through the application of training

loads on the body that lead to the occurrence of the adaptation process, the burden placed on the athlete's body during training can lead to adaptation if this burden is applied in a scientific manner through standardized sports training, but if it is given randomly and without preparation based on scientific principles, this effort may lead to injuries to the athlete, and the components of the training load that are at the intensity of effort (50-70%) (70%) of the maximum capacity and the volume of effort (15-30 repetitions) for each exercise aims to develop strength endurance and speed endurance (Sarmad Said Shukr, 2007, 8).’ As for endurance, (Osama Kamel Ratib and Ali Mohammed Zaki, 1998, 19) states that continuous jogging exercise for a distance of (1-2) kilometers develops endurance, and these are the intensities used in the training curriculum.

accelerated onset of these effects of increased heat, not only as a result of the heat produced by the muscles during their work as well as the body's heat, but also the changes in blood circulation that accompany training lead to a decrease in the body's ability to eliminate excess heat (Abu Alula Ahmed Abdel Fattah, 1997, 501). This affects the increase in metabolic processes due to the increased need for oxygenated blood, thus increasing blood circulation by increasing the heart rate, but a large part of it goes to the tissues near the skin, which carry heat currents, which is one of the ways to get rid of heat, so the amount reaching the working muscles is less than in a temperate atmosphere (Mohammed Kamal Mustafa, 1996, 151).

The practice of physical effort during hot weather causes additional thermal burdens on the trainee's body, so it will lead to ‘an increase in body temperature and thus a state of intense competition between the working muscles and the skin to take the largest amount of blood pumped by the heart’ (Abdul Rahman Abdul Hamid Zaher, 2000, 216), thus increasing the number of heartbeats to provide a sufficient amount of blood to the working muscles (Abdul Rahman Abdul Hamid Zaher, 2000, 216)

Repeated and continuous training for long periods of time leads to a significant improvement in maximum oxygen consumption, which is basically an ideal indicator of the fitness and efficiency of the circulatory and respiratory systems and their associated organs, as the adaptation associated with the degree of maximum oxygen consumption is necessarily the result of the adaptation of the two systems This is confirmed by (Jaber Kazem Amin, 1997, 177) who indicated that ‘rises with the increase in the level of physical fitness and may sometimes reach a level of 30% higher than its rate after the performance of oxygen training’.

Chapter Four

4- Conclusions and Recommendations:

4.1 Conclusions:

1. The training curriculum at a temperature of (34_36) contributed to the development of strength tolerance for the research sample.

4-2 Recommendations:

1. High-temperature training, especially for people who want to lose weight and minimize the proportion of the adipose component.
2. Apply the high temperature training methodology to athletes of different sports and levels.
3. The use of high-temperature training to develop physical abilities, especially those characterized by endurance.

Sources:

1. Aboul-Ella Ahmed Abdel Fattah; Sports Training Physiological Foundations, 1st Edition, (Cairo, Dar Al-Fikr Al-Arabi, 1997); (Cairo, Dar Al-Fikr Al-Arabi, 2003).

2. Aboul-Ella Ahmed Abdel Fattah; Physiology of Training and Sport, 1st edition, (Cairo, Dar Al-Fikr Al-Arabi, 2003).
3. Osama Kamel Ratib and Ali Mohamed Zaki; Scientific Foundations of Swimming: (Cairo, Dar Al-Fikr Al-Arabi, 1998).
4. Jaber Kazem Amir; Physiological Tests and Measurements in Sports, 1st edition, Kuwait, 1997, pp. 177-178.
5. Sarmad Saeed Shukr; The effect of absolute and relative strength training on some physiological, physical, mechanical and achievement variables for 200-400 metres sprinters: (Doctoral thesis, Faculty of Physical Education, University of Baghdad, 2007).
6. Abdul Rahman Abdul Hamid Zaher; Physiology of jumping and jumping competitions, Cairo, The Book Centre for Publishing, 2000.
7. Mohamed Sobhy Hassanin; Evaluation and Measurement in Physical Education, Vol. 2, No. 2: (Cairo, Dar Al-Fikr Al-Arabi, 1987).
8. Mohamed Sobhy Hassanein; Measurement and Evaluation in Physical Education and Sports, S1.i3: (Cairo, Dar Al-Fikr Al-Arabi, 1995).
9. Mohamed Kamal Mustafa: Health Approaches to Vitamins and Minerals, Cairo, Dar Al-Tala'i for Publishing and Distribution, 1996.