Chinese self-massage to improve physical recovery in school Basketball athletes

Abstract

Massage can be applied to anyone as a prophylactic, therapeutic and health-protective means. One of its variants is self-massage sometimes used in sports to promote sports results. The objective of this study was to assess the influence of Chinese self-massage on the recovery of athletes belonging to the male school basketball team in the 15-16 year category of Villa Clara. A pre-experimental and longitudinal research was carried out; with four months of evolution (January - April). Pedagogical terrain tests were applied such as: 30 meters (speed), 2 x 40 seconds (speed resistance) and the endurance test (2000 meters), analyzing recovery in the first, third and fifth minutes. For data analysis, statistical-mathematical methods were applied to find the level of significance; finding positive results in the application of the work. There was improvement in recovery in the different tests applied (speed, speed resistance and endurance) with significant differences in each of them. Therefore, Chinese self-massage should be considered as another option to improve the recovery of high-performance athletes.

Keywords*: Self-massage, recovery, sport, high performance*

Introduction

Sports massage was already used by Russian doctors since 1897, its fundamental development, especially as sports massage, is due to the Russian doctor and scientist Zabludowski I.Z., professor at the Russian Military Academy of Medicine. (Fernández, Santana and Morales, 2020)

Since the beginning of the 20th century, through the multiple experiences, publications, technical applications and massage systems of different European, American and Eastern schools (China and Japan especially), the definitive foundations of modern massage have been laid. Various therapeutic methods and techniques are distinguished: classic therapeutic massage (Swedish massage), reflex massage, connective tissue massage, acupuncture massage or chiropractic massage, sports massage and self-massage. (Fernández Pérez, A, et al 2020)

The application of massage worldwide has spread, for example, Spain uses therapeutic massage, in the Teknon clinic in Barcelona, to obtain faster recovery of fatigued and injured muscles. The Institute of Physical Culture and Sports of Moscow applies massage

in the recovery of high-performance athletes, Costa Rica, Cuba, the institutes of Paraná and the Higher Institute of Physical Culture carry out research on the application of therapeutic massage in muscle recovery . (Massage Portal, 2023; Fernández Pérez, A, et al 2020)

Authors such as Castro (2008); Salazar (2019); Guerra, Pulgar, Crespo, Núñez and González (2022) highlight that currently several types of massages can be distinguished, coming from the eastern tradition (El Anmo) Traditional Chinese Massage, also known as Tuina, the classic or Western massage, the reflexotherapy and, on the other hand, self-massage. Self-massage is a therapy of Traditional Chinese Medicine, based on the Jing Luo and Zang Fu theory, of circulation of energy, blood and body fluids, achieving its effects through direct maneuvers on the human body performed with the hands, called manipulations.

110 types of manipulations have been described according to the subject who executes the action, two forms of massage are described: Self-massage (Do In) and Anmo (massage performed by another person). Massage therapy has its applications in those pathologies where the aim is to improve circulation, release adhesions, relieve pain, and promote general or local relaxation. Among its functions are: stimulate the channels, stimulate acupuncture points, stimulate peripheral nerves, facilitate the circulation of Xue and Qi, promote cellular metabolism, regulate the activity of the Central Nervous System. (Castro, 2008; Saz, 2020; Teleopuestas.es, 2019)

For his part, Quetglas (2019) points out that sport is currently related to great physical loads and considerable emotional tension. To increase sporting achievements, a structuring of the training process is necessary, in addition to using a whole arsenal of means, aimed at simultaneously increasing the work capacity and recovery of athletes. Sports massage is one of the most effective means to achieve these objectives within training; maintain sports form for longer, as well as recover work capacity more effectively.

It has been shown that despite the vast experience with the application of sports massage in athletes subjected to high training loads, the effects of Chinese self-massage on the recovery of athletes from the effort made are still unknown. For this reason, it is necessary to study other massage alternatives that favorably influence sports performance, allowing athletes to achieve bio-energetic balance and faster recovery.

Based on the fact that physical loads produce side effects on the athlete such as: tiredness, fatigue, muscle weakness, decay, among other symptoms and signs that make the training

process difficult, it is necessary to carry out this work. which aims that once the acupuncture points have been mastered, it will be possible to know what will be the influence that the selected Chinese self-massage system exerts on the recovery of basketball athletes in the 15-16 year category of Villa Clara?

The objective of the research is: to assess the influence of Chinese self-massage on the recovery of athletes belonging to the male school basketball team in the 15-16 year category of Villa Clara.

Methodology

The research carried out was pre-experimental, prospective. The study was carried out at the beginning of special preparation and at the end of special preparation in the months from January to April. This was carried out at the Provincial Sports Medicine Center of Villa Clara.

The population was made up of (11) male basketball athletes, category of 15-16 years from the Provincial Comprehensive Sports School (S.I.S) ¨Héctor Ruiz¨ of Villa Clara, the athletes had an average age of 15.55 years, sports age of 3.36 years, the possible starting age in the sport was 12.18 years and as key informants a coach who was interviewed to assess their criteria or the degree of satisfaction with the research carried out and a Master in Natural and Traditional Medicine who was in charge of teaching the appropriate form and order for the stimulation of the points.

To undertake this work, the consent of the management, Ethics Commission, and Scientific Committee of the Institution was taken into account, in addition to the information and approval of the coaches, athletes, parents, medical and paramedical personnel for their cooperation and participation. in the investigation, otherwise the investigation could have been applied. Once this was agreed, they were explained what the study consisted of and how it would be carried out.

Methods and techniques

The interview was applied to trainers to know the degree of satisfaction regarding the research, an interview was applied to 5 Masters in Natural and Traditional Medicine to investigate, according to their knowledge, which would be the most energetic points, the interviews were standardized and individual. For its part, the observation is structured for athletes, systematic and non-participant.

For the experimental method, specifically the pre-experiment, field observation was applied, with the intention of collecting qualitative data through interviews, review of

documents, observation of the variety of massages applied, their difficulty between one type and another, the ability of application by athletes, and language used by specialists for their understanding and execution, among others. All of this is done qualitatively. In addition to observing the recorded videos to more accurately detect deficiencies and be able to correct them in the training sessions of athletes and coaches. In the pre-experiment, the application of the self-massage system that was the experiment to be applied is achieved with the measurement of the athletes in the corresponding stages. The research has been carried out entirely using the Vancouver method.

Procedures

Methodologically, the criteria of specialists were taken into account for the selection of points.

The points to use are the following Pc 8, Vg 14, Ig 11; Dan Tin; Vg 23 - 27; VB 34; E 36; B 6 and R 3. And they will be stimulated in this same order.

The organization of the group for teaching self-massage was carried out frontally, leaving the formation made up of two rows

Both hands will be rubbed, one palm against the other, sliding the flexed middle finger and energetically activating the following points:

Lao Kung or pericardium 8 (Pc 8); located between the 2nd and 3rd proximal metacarpal bones at the metacarpo-phalangeal junction, in the radial depression next to the 3rd metacarpal.

Governor Vessel 14 (Vg14). Dazhui: between the C7 and T1 spinous processes. (Fernández Pérez, A, et al, 2020; Saz (2020)

Large Intestine 11 (GI 11): Quchi (chu-chih). -Location with the elbow flexed, it is found in the depression of the external or radial end of the elbow fold, at the midpoint of the line that joins the epicondyle with point P5. (Fernández Pérez, A, et al, 2020)

Sobbing in the Dan Tin, the largest energy point of the body, ranges from Ren 3 to Ren 6. Located 1 cun above the upper edge of the pubis to 1.5 cun below the navel. (Fernández Pérez, A, et al, 2020)

Rub with the back of the fists linearly up and down, applying light pressure from Bladder 23 to 27 (V23-V27). The area occupied by the Kidney is always toned and raises energy. It is located two finger widths outside of L2 to L5. (Fernández Pérez, A, et al, 2020)

Gallbladder 34 (VB 34): Yang Lingquan: is in the anterior and inferior depression of the head of the fibula. It corresponds to the L5 metamer. (Fernández Pérez, A, et al (2020); Teleopositions.es (2019).

Stomach 36 (E 36): Location one finger width lateral to the lower edge of the tibial tuberosity. It corresponds to the L5 metamer, that is, outside and below the tibial tuberosity 3 cun below e 35. (Fernández Pérez, A, et al (2020); Quetglas (2019)

Spleen 6(B 6): Sanyinjiao It is located four finger widths from the highest point of the medial malleolus. It corresponds to the L4 metamer. (Fernández Pérez, A, et al (2020); García and Morales (2024); Iberficio (2021); Lee, Vilela and Galeas (2023)

Kidney 3 (R 3). It is located between the medial malleolus and the Achilles tendon. This point will always be toned. (Fernández Pérez, A, et al (2020)

All the aforementioned points are stimulated in favor of and against the meridian (clockwise), according to the respiratory rate of each athlete, taking into account their inhalation and exhalation for one minute for each point.

Said self-massage was performed before beginning the warm-up of each training session with the aim of preparing the body for the activity, activating the energy systems that would be used in the physical load. It was first carried out with the use of a guide, a Master in Natural and Traditional Medicine, especially in Chinese massage, who came every Friday for a month to teach, train and correct the technique used, with emphasis on the captain of the team who was trained, being in charge of carrying out and guaranteeing that each athlete could self-stimulate, according to what was referred to in the research, the activity being supervised on Fridays by the Master and the rest of the days by the coach and the team doctor who came 3 times a week to participate and supervise the correct execution of the massage.

There are different types of Tests that measure functional or physical abilities. The research carried out used the following field tests or pedagogical tests that allowed the physical capabilities of the athletes to be measured; they were carried out at the beginning of the physical preparation and at the end of the special physical preparation.

Speed: defined as the speed or speed at which a movement is performed. This variable is obtained in the initial and final evaluation through the 30-meter flying test (30-meter test) (19, 20). The recovery percent was measured at 11.31.

2 x 40 seconds, measures speed endurance or lactate anaerobic capacity. It occurs when you run at full speed for a time of 40 seconds, rest for 3 minutes and repeat the same test. The distance traveled in both moments is determined. At the end, the recovery was measured in percent of the 1st, 3rd and 5th minute.

Resistance test. (Tomakidis 2000 meters test), measures aerobic capacity. It consists of running and resisting the distance of 2000 m, as fast as possible. The resting heart rate

was taken on the field; upon arrival, the athletes lay down for 10 minutes and then the rate was measured. The pulse taken was the radial pulse in 10 seconds, it was done by an examiner in case the athlete did not know how to take the pulse or by the athlete himself; prior training in taking this; The result obtained would be multiplied by 6 to know the athlete's heart rate, giving the total number of beats per minute.

The load or work frequency was taken immediately after the race, and the recovery pulse was taken at the minute, 1st, 3rd and 5th minute after the end of the test, calculating the recovery percentage of the 1st, 3rd and 5th minutes.

Information processing techniques

All data were collected and statistically processed in the SPSS statistical package - PC version 12.0 for Windows. Elements of descriptive statistics were used such as arithmetic mean (x), standard deviation (SD), standard error of the mean (Sx) and coefficient of variation. From the inferential statistics we used the Shapiro-Wilk test, to know the distribution of the variables, those that behaved as normal the T test was applied, which did not demonstrate normal behavior; The Wilcoxon, Friedman signed rank test for related samples was performed. To know their incidence.

Results and discussion

The research was carried out on all Basketball athletes, 15-16 year old category of the SIS, for 100% participation.

Table 1 Percentage (%) of recovery of the 30 meters

	% Recovery (speed)			
Data	**1st. Minute.**		**3rd Minute**	
	1st. Measurement	**2nd. Measurement**	**1st. Measurement**	**2nd. Measurement**
Average	36,26	72,40	68,61	90,67

Standard deviation	13,06	15,43	12,32	9,59

Source: sports line history

Legend: Typ.Dev. (Standard Deviation), 1st. Med. Corresponds to IPFE, 2nd. Med. Corresponds to FPFE Tc=1.964; p<0.01

Table 1 shows the incidence of Chinese self-massage in the recovery of these athletes in the 30-meter (speed) test. The percentage of recovery was calculated in the first and third minutes, where the excellent response of the athlete could be seen. organism before the use of the self-massage system, a significant difference (p<0.01) was found between one test and another of the pre-experiment, observing improvement in the recovery percent in the 1st and 3rd minute of recovery (36.26% and 72.4% respectively) in the 1st minute of recovery, and from (68.6% to 90.67% in the 3rd minute), a result that exceeds the forecasts, since in other tests carried out on these same athletes in previous years, it was verified that, despite the improvement in recovery with the normal training that is administered, such high percentages are almost never reached, not only in the provincial teams but also in the national teams. of Basketball.

The response in both moments, the beginning of the special preparation and the end of the special preparation, has been extraordinary, since in the 1st minute it exceeds 50%, an important fact, since the literature reviewed in that minute must be 50% in the minute. 1 and 70% in minute 3 and in the investigation these values are far exceeded.

It is necessary to highlight that the difference not only occurred between both stages and both minutes of recovery, but also between both first minutes of both stages, between both thirds and between the 1st and 3rd minutes between themselves and both stages, which would imply the effectiveness of the same.

Table 2. Percentage (%) of recovery of 2 x 40 meters

	% Recovery					
Data	**1st. Measurement**			**2nd. Measurement**		
	1st. Minute	**3rd.**	**5th.**	**1st.**	**3rd.**	**5th.**

		Minute	Minute	Minute	Minute	Minute
Average	45,34	56,59	62,60	60,64	72,01	84,50
Standard deviation	16,20	18,21	20,51	15,40	15,02	15,15

Source: sports line history

Legend: Typ.Dev. (Standard Deviation), It is expressed in %, 1st. Med. Corresponds to IPFE, 2nd. Med. Corresponds with FPFE or IPC

Table 2 The 2x40 second test that measures lactate aerobic capacity; in this case speed resistance and in this study the recovery of this test is analyzed, taking the recovery percentage of the first, third and fifth minutes whose average results were the following 45.34%; 56.59%; 62.60% in the first stage of the test, beginning of special preparation and 60.64%; 72.01%; 84.50% in the second or final stage of the special preparation respectively, finding significant results in recovery $p<0.05$. This result not only compared the two moments, the comparison is made between the minutes of each moment, verifying a highly significant difference of $p<0.01$.

Table 3. Percentage (%) of recovery from the resistance test

Recovery minutes	**1st minute**		**3rd minute**		**5th minute**	
Data	**IPFE**	**FPFE**	**IPFE**	**FPFE**	**IPFE**	**FPFE**
Average(x)	24,19	39,09	44,5	68,39	73,68	82,21
SD	12,28	11,75	20,1	10,86	12,29	7,96
Sx	4,09	3,92	6,7	3,62	4,1	2,65

Significance	**p<0,03**	**p<0,00**	**p<0,00**

Source: sports line history

Legend: (x)= Mean, SD= Standard Deviation, Sx Statistical error of the mean. It is measured in %

IPFE (start of special preparation) FPFE (end of special preparation)

Table 3 Assesses the recovery in the 2,000 meter endurance test, showing significant differences in them; it was also found that there was a homogeneous increase in the recovery percentage at all times. In the bibliography consulted, it is stated that in this type of test the first minute must exceed 25% recovery, the third 50% and in the fifth 90% in males and the manifest values were the following: 24.19% to 39.09 % between the two moments, verifying that in the second moment the values reported in the literature were exceeded. In the third minute it was from 44.5% to 68.39% where the same thing happened as before and in the fifth minute it was from 73.68% to 82.21%, although it does not exceed the values of the reviewed literature if a significant increase was found, reaching close values. at 90%.

As can be seen in the results presented, it is evident that Chinese self-massage has been effective for the purpose for which it was applied in Villa Clara Basketball athletes.

Conclusions

Once the Chinese self-massage system was applied, a significant improvement in the percentages of heart rate recovery could be verified, implying a reduction in the time for the recovery of physical work capabilities in the athletes under study.

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