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Pilates Improvement the Individual Basics of Service and Smash in Volleyball

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Abstract

A sample of 20 players 12-to 14-year old young male volleyball athletes participated in this study to test the improvement of agonistic performance, especially for the individual basics of the service and smash, using Pilates method in additional training sessions. The research was conducted with observation and manual and computerized detection for six months with tests for explosive strength detection and smash precision. The measuring the length of the lower limbs with the ASIS method showed a difference of a few millimetres between the two lower limbs and hypertrophy of the longest limb and hypotrophy of the shortest one. The athletes were divided into group A control (10 athletes) and group B (10 athletes). Only Group B participated in 20 additional training sessions with the Pilates method. The study showed improvement in performances with particular reference to the average percentage of crushing between 4 and 7%. Group B athletes, they found a uniform muscle toning and improved breathing control. The A group, motivated to perform the workouts with greater concentration, showed a performance improvement of a few percentage points. These athletes can improve the effectiveness of using unconventional methods to improve sports performance in a Team Sport.

Key words: *team sport, volleyball, posture, pilates, basic individual*

Introduction

The man has always tried to improve his physical performance by any method Physical activity, athletic performance, and recovery from exercise is enhanced by optimal nutrition (Mazzeo et al., 2016). Over the past 20 years, research has clearly documented the beneficial effects of nutrition on exercise performance (Mazzeo et al., 2016). There is certainly that what an athlete eats and drinks can affect health, body weight and composition, substrate availability during exercise, recovery time after exercise and exercise performance. As the research and interest in sport nutrition has increased, so has the sale of ergogenic aids, supplements and diet aids, all directed at improving sports performance (Mazzeo et al., 2013). Therefore, the athletic performance of young athletes often undergoes significant variations in both qualitative and quantitative terms (Montesano, 2016). Quality discontinuity in quality can be attributed to the incomplete acquisition of specific disciplinary techniques, while the quantitative one can be attributed to insufficient athletic training (Sedano, Marín, Cuadrado, & Redondo, 2013; Montesano, 2013). In many cases, however, these considerations have to add a reflection on organic-somatic restructuring occurring during the adolescent phase and affecting the ability to excretise the young person. From the analysis of the quality of sports performance in young volunteering athletes at competitive recreational level (Anderlini & Calducci, 1996), one of the performance variables was represented by postural imbalances (Duval-Beaupère, Schmidt, & Cosson, 1992).

Such manifestations, together with other factors such as the psycho-physical characteristics and the individual and team's skills and capability, the training methodology (Beccarini & Madella, 1997), the technical regulation of sports discipline, affect the effectiveness of the motor ge Beccarini and Madella (1997) suture, which is therefore subordinated not only to the

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intensity of the performance but the age and the athlete's psychophysical health (Montesano, 2013).

The athlete, engaged in both professional and competitive recreational activities, performs complex actions programmed and developed in training sessions that are often not replicated in agonistic contexts because of the incidence of the mentioned variables which are often not controllable.

The twenty athlete sample, participating in a youth volleyball championship of annual duration, highlighted the discontinuity of the agonistic performances and, by careful clinical-diagnostic examination, the diversification of the postures taken by the subjects both during the normal daily routine and during the Volleyball activities, training sessions and races.

The athletes, were subjected to competitive medical examinations for the release of agonistic medical and sports fitness during which the sports and orthopedic physicians identified the incidence of lower limb dissection among the many postural variables (Mazzeo, 2016; Mazzeo et al, 2015). The measurement, carried out, with the supine lying subject, calculating the distance between the upper anus thorax (ASIS) and the malleolus. The measurement provided results of some millimeter differences between the two limbs, despite the natural compensatory adaptation mechanism of the postural system which highlighted muscular hypertrophy of the quadriceps of the longest limb, for major load issues, and consequent short limb hypotonia. In the global evaluation, the interaction of the musculature with the various bodily, cervical, dorsal, lumbos, and abdominal areas (Le Huec, Aunoble, Leijssen, & Pellet, 2011) as well as the lower limbs was considered, and the exploration of explosive strength and some technical gestures such as and crushed.

By evaluating the results of the initial tests (Table 1), an intervention aimed at relaxation of the contracted areas, the strengthening of the lower muscle, has been hypothesized, not forgetting the importance of the technical movements (Montesano, 2014) in relation to the axes and the anatomic planes.

The aim was to test the improvement of agonistic performance, especially for the individual basics of the service and smash in volleyball play, using Pilates method in additional training sessions.

Methods

The research was developed by detecting explosive strength indices, referring to the Sargent test (P.G. de Salles da Costa Mendes, do Amaral Vasconcellos, G.F. de Salles da Costa Mendes, Tavares Fonseca, Dantas, 2012), and the percentage of precision in services and crushing exercises. The observational method and the manual and computerized survey were used, from September 2016 to March 2017, and the initial test results allowed the athletes to be divided into two groups. The control group A (identified athletes 1,2,3,4,5,6,7,8,9,10), consisting of athletes with the role of floating and central, and group B (identified athletes 11,12,13,14,15,16,17,18,19,20), consisting of athletes who have the role of crusher and the opposite who had more obvious symptoms of imbalances perhaps determined by the technical actions that exerted explosive and twisting movements. The two groups, during the agonistic vintage, followed the normal training methodology (Barba & Tafuri, 2007) prepared by the technical staff consisting of two weekly training sessions, featured by athletic, technical and tactical exercises, as well as by training sessions and official competitions.

For the improvement of the postural structure, it was supposed to use, with extra training sessions, the unconventional Pilates method (Korte, 2009), to be administered both in indoor and outdoor plants. The Pilates method (Miessner, 2012) is based on the development and refinement of the principles of health and muscle toning, with the application of Contrology exercises and the use of rehabilitation equipment to replace moving activities and aimed at stimulating muscle strength and activate deep muscles to work in opposition.

Addresses and objectives

The recipients of the survey were 20 young male athletes aged between 12 and 14, participating in volleyball competitions with competitive sports and medical competitions. The objectives of the study were to improve the postural layout, sport performance, and precision rates in performing the basics of services and crushing.

Additional Training

The team was divided into two groups of 10 athletes each and only one group (group B) was given 20 additional sessions in the gym, 3/4 monthly sessions, in addition to the normal training (Bompa, 1999) sessions conducted with the defined athletic-technical programming To start championship by technical staff. Additional relaxation and enhancement sessions were performed using the exercises with The Hundred, Roll Up, Roll Over, Leg Circles, Roll Legs, Double Leg Strech, Open Leg Rocher, Corkscrew, The Saw, alternate to skip high, medium, raced race; change of direction; run with speed variations; jumping of small obstacles; Jump.

Tests

The tests (Marella & Risaliti, 2007) were administered after an athletic session (Fox, Bowers, & Foss, 2005) consisting of an initial general activation, slow running for about 8 minutes, interrupted by 1 minute active recovery every 4 minutes, and mobilization exercises Articulate and stretching (Anderson, 2003) for a total of about 20 minutes of test preparation time. The survey was conducted in the volleyball field with athletes positioned on the bottom line of the field and at the three-meter area for the crush**.**

1) Detection of explosive strength by administration of the Sargent test (using a rope sized in cm hung on the wall):

1a) Determination, in height, of the starting metric grading: athletes positioned next to a wall, where a metric rope was placed in cm, with limbs inferior theses and a lying upper limb. Mark the height reached by the fingers of the lying limb (h1);

1b) Height measurement of metric jump grading: Athlete in the semicircular position (90 °) makes a jump and the measurement is detected match the highest point touched with the fingertips on the metric rope (h2);

1c) The value of the elevation (explosive force) is defined by calculating the metric difference between the jump height (test 1b) and the initial height (test 1a) ie h2 - h1.

This test has been performed three times and was considered the best difference between h2 and h1**.**

2) Scoring (precision) of the number of services (20 for each athlete in two steps) to five 18-m. bottom-set templates.

3) Scoring (accuracy) of the number of crashes made in three-step run (20 for each athlete in two steps) to five bottom-set silhouettes, about 10 m (Figure 1).

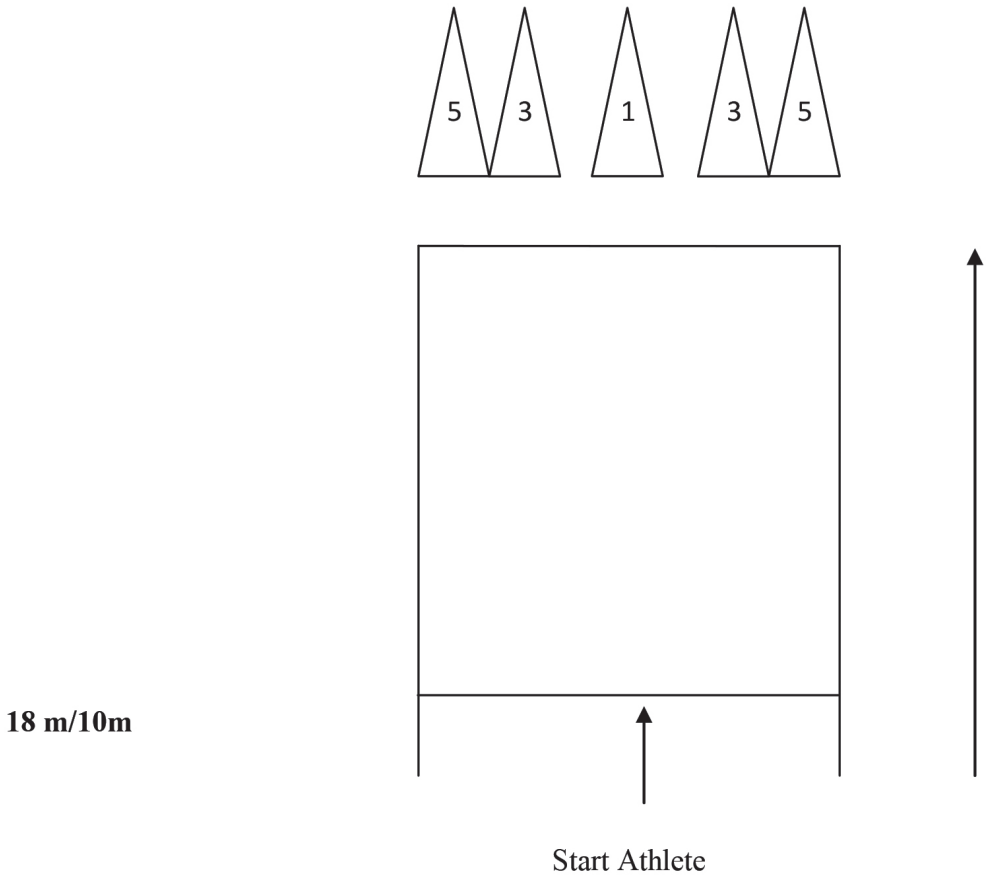

Figure 1. Tests 2 (two) and 3 (three)

In tests 2 and 3, the scoring score was awarded (5 points, 3 points, 1 point) with a theoretical maximum score of 100.

Materials

The technical materials and survey instruments used were selected according to the objectives of the research, the characteristics of the tests and the specificity of the proposed workout path. For collecting data they have been used to that purpose grid work (Tables 1, 2, 3).

Facilities and technical equipment used were:

Regulation volleyball court (18m x 9m)

Numbered figures

Volley Ball

Small tools of the Pilates Method: Mat, Gym band, Fit ball, Magic Circle

Great Tools: Leg press, multipower, solid body, barbells, benches

Results

Initial Recognition

Initial screening showed that the young athletes have shown different results for which the researchers decided to constitute two groups of 10 athletes each, A and B. Group A had an average percentage of about 60% of services and crushing efficacy, while that for Group B was about 70% (Table 1). It was observed that the fundamentals performed by the subjects with the left dominant limb were more precise.

Table 1. Initial detection of service and smash accuracy

Group A					Group B				
Atlethes	**Service**	**%**	**Smash**	**%**	**Atlethes**	**Service**	**%**	**Smash**	**%**
1c	55	55	77	77	11s	79	79	88	88
2c	66	66	64	64	12s	84	84	79	79
3c	78	78	82	82	13s	48	48	66	66
4c	47	47	66	66	14s	70	70	81	81
5c	48	48	58	58	15s	68	68	78	78
6c	39	39	45	45	16s	77	77	78	78
7p	69	69	56	56	17o	82	82	69	69
8p	58	58	49	49	18o	67	67	72	72
9p	69	69	61	61	19o	79	79	77	77
10p	72	72	65	65	20o	65	65	67	67

Legend: c-central; p-float; s-spiker; o-opposite

Intermediate Recognition

Intermediate detection was performed for Group B alone and the average percentage of services and crushing exercises increased by about 4.5%, attending around 75% with a single negative sign for the 12s athlete who reduced its Personal percentage for crushed by about 7% (Table 2).

Table 2. Intermediate detection of service and smash accuracy (Group B)

Atlethes	Service	%	Smash	%
11s	82	82	90	90
12s	85	85	72	72
13s	56	56	68	68
14s	71	71	81	81
15s	68	68	78	78
16s	81	81	79	79
17o	82	82	69	69
18o	69	69	72	72
19o	79	79	77	77
20o	71	71	69	69

Legend: s-spiker; o-opposite

Final Recognition

The final data showed (Table 3), for Group A, an average percentage of about 64%, an increase of 4% compared to the initial data, with particular reference to athletes 4c and 5c, which increased the performances by about 6-7%. Group B confirms the positive trend of an average percentage increase of around 77%, with a further 2% increase over the mid-term recession.

Table 3. Final detection of service and smash accuracy

Group A					Group B				
Atlethes	Service	%	Smash	%	Atlethes	Service	%	Smash	%
1c	59	59	78	78	11s	87	87	91	91
2c	66	66	65	65	12s	85	85	79	79
3c	80	80	82	82	13s	62	62	71	71
4c	56	56	69	69	14s	74	74	82	82
5c	54	54	64	64	15s	73	73	79	79
6c	48	48	49	49	16s	82	82	79	79
7p	71	71	62	62	17o	84	84	71	71
8p	58	58	51	51	18o	74	74	73	73
9p	69	69	63	63	19o	79	79	77	77
10p	74	74	67	67	20o	75	75	71	71

Legend: c-central; p-float; s-spiker; o-opposite

Table 3 shows the comparison of the final numerical data between group A and group B. The percentage of improvements, divided by groups, has been reported in Figure 2, group A, and in Figure 3, group B.

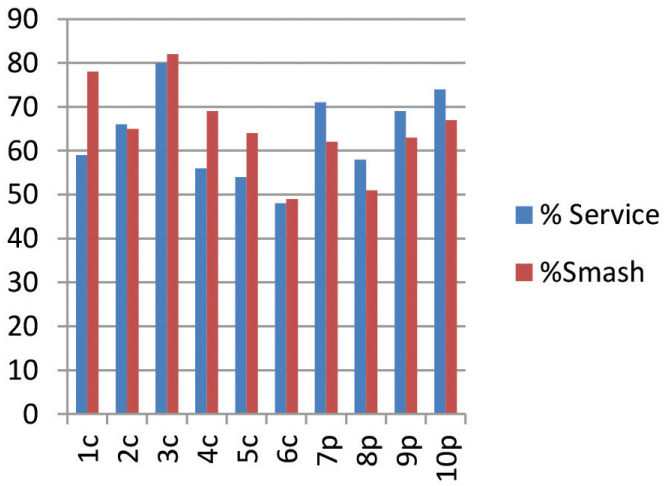

Figure 2. Final detection graphic of service and smash accuracy Group A

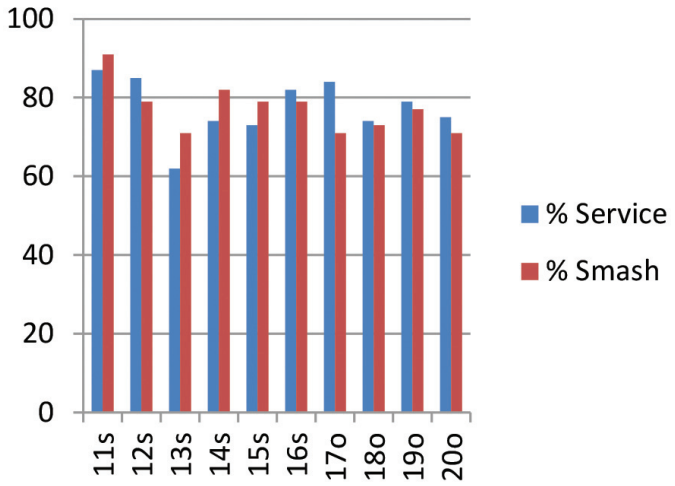

Figure 3. Final detection graphic of service and smash accuracy Group B

Discussion

The activity program envisages competition among equally skilled people, which is the best way to test your own athletic abilities and to evaluate your own progress, in order to promote physical, mental, social and spiritual growth. Determining the causes of discontinuous agonistic performance allows for predisposing training courses aimed at improving the psychophysical conditions of young athletes. The variables affecting youth performances are manifold and one of them is represented by postural imbalances that, in time, paramorphism can evolve, if not resolved, into dimorphisms (Negrini et al., 2005). The study showed the effectiveness of the use of unconventional methods (Bernardo, 2007) to improve sports performance and final results. The latter, collected at the end of the observation period, highlighted the improvement of the performances of the entire young volleyball champion. Group B athletes who expressed positive feedback on the additional method denoted the biggest increases in the average accuracy percentage of services and crunches but also Group A showed significant improvement in performance. Group B members stated that they received benefits from participating in the supplementary sessions with the Pilates method as they found a uniform muscle toning and improved respiratory control during sports practice. They also found the reduction of postural vices, limiting contractures and muscular atrophy, with the mobilization of the shoulder blades and the cervical, dorsal and lumbar extent. The adolescent age of the sample has undoubtedly favored an improvement in performance even in relation to a natural organic-muscle development but the chances of reducing the incidence of postural imbalances and the risk of injury are considered important variables in the programming of effective sport activity also if the athletic performance of young athletes often undergoes significant variations in both qualitative and quantitative terms. The discontinuity of performance can be attributed to the incomplete acquisition of specific disciplinary techniques, while the quantitative one can be attributed to insufficient athletic training.

The sport can be a beautiful and rewarding experience, it can promote the maturation and growth, can improve self-image and personal safety encouraging growth and stimulating enthusiasm for the comparison and the development of collaborative skills and relationships.

In conclusion, this model of teamwork suggests that athletes can improve their muscular endurance, flexibility and individual basics of service and smash using Pilates exercises that do not require equipment or a high degree of skill and are easy to master and use within a personal fitness routine.

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Conflict of Interest
The authors declare that there are no conflicts of interest.

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