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Heaviness of Intra-Abdominal Fat on Posture/Balance Control among Soccer Players Under 21

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Abstract

Lumbar pain (LBP) is one of the most common musculoskeletal symptoms among health care employees (Choobineh et al., 2016). Physical sports studies have also shown to be a risk factor along with abnormal posture, bending, twisting, gardening, and lack of exercise. Since this theory, the current study was designed to examine the significance of mechanical effects of intra-abdominal on posture/balance control among soccer players under 21 yrs. Although, our background confirms that balance deficit tends to differ somewhat in the classic body types. For the proposed, a total of 163 male soccer players under 21 years from the Algerian football championship participated in the present study. Their average age 19,56±1.22 years, distributed into homogeneous groups, according to them, body fat percent categories. Tested by saving tests (Body Fat Percentage(BFP)-abdominal circumference(WC) – Abdominal test (Abdo) – Modified Bass Test of Dynamic Balance(DB) and standing balance(SB)).

Based on the analysis statistics, we confirm:

a) The increase Intra-Abdominal Fat represents big risk posture/balance control.

b) Abdominal fat contributes to an abnormal function, which leads to reduced physical performance capabilities early and to pathology later.

Based on the differences acquired by the research team, we emphasise that abnormal reflexes cause a constant structural misalignment, which allows a disproportionate amount of weight and muscle traction to fall on certain parts. However, sports participation cannot guarantee physiological body mass and body composition. Understood that we guide us to recommend, the evaluation of body composition as a part of body management and control. View the body gain, leads to abnormalities posture, muscle coordination, control of movement, balance, and awareness of body position.

Keywords: heaviness, intra-abdominal fat, posture/balance control, players under 21.

1. Introduction

Many studies showed that LBP has a higher prevalence among medical practitioners than any other musculoskeletal symptoms (Almalki et al., 2016). Studies show that back pain occurs frequently in college football players (27 %), artistic gymnasts (50 %), and rhythmic gymnasts (86 %) (Purcell, Micheli, 2009). However (Treas, Wilkinson, 2013) confirm, that poor posture is one of the highest causes of back pain, due to body alignment limits function related to prolonged periods of jobs time, which does not allow the change of positions frequently (Shrawan Kumar, 2003). While in the case of this study, we refer to footballers, where the low back injury was the most common and most common injury, respectively according to (Gengenbach, Hyde, 2007). From the above and the indicate of health problem issues (Morsi, Yosry, 2015) who reports that the

setting experience decreased energy, after more than 25 minutes and causes neck and back pain. Moreover (Meen et al., 2013) admit that maintaining a fixed sitting posture for long periods of time might lead to static muscular efforts, which results in the seat back and headrest carriage, causing the musculoskeletal disorders (Martin, Kessler, 2007) according to prevalence studies, which agreed the significant musculoskeletal pain related to the quality of lifestyle (Mechanick, Kushner, 2016). Our background confirms that contact sports, repetitive flexion, extension, and torsion are the most injury of low back pain in the sports practise. In contrast, athletes in certain sports report a reduced incidence of low back pain, suggesting that athletic fitness may be protective (Gengenbach, Hyde, 2007). Through these proofs, the current study was intended to investigate the impact of Follow-up body mass index and body fat percent control. Where our hypotheses based on in one hand, on the confirmation of (Nikolaidis, 2012), that the sports participation cannot guarantee physiological body mass and body composition down to 5 % BF the case of athletes to maintain or improve performance according to (Plowman, Smith, 2008). Well, in another hand, we refer to the procedure practised by the Algerian breeders based on the intuition of the trainers without taking into account the anthropometric measurements (Mohammed et al., 2016). Whereas the similar studies oversteer these approaches and demand the coach to choose very well their methods and strategies, basing on learned their players to maintain their weight loss (Vijender Sharma, 2011) and scheduling training programs and assess calendar, seen lower back pain requires a specific program of evaluation and training.

On its foundations, the current study stems from the theoretical medical background, which agrees that human spine was not designed to be fixed (Felstead, 2014) confirmed by similar studies in losing excess body fat to avoid many back problems. Although, the current study was designed to examine the significance of mechanical effects of intra-abdominal on posture/balance control among soccer players. In order to provide baseline information for future analytical studies, our aims are to describe the correlation between body mass and fat control as part of the body-weight management and their consequence on posture/balance control.

2. Methods

Protocol

To achieve this goal, we based on the indication which agrees that the prevalence of low back pain is associations with body fatness, fat distribution and height (Clifford et al., 2005). Where athletes are at greater risk of sustaining a lumbar (lower) spine injury due to levels of physical activity (University of Maryland Medical Center (UMMC), 2016) injury as lots of stress undergoes to the spine, well the absorption of pressure, twisting, turning, and even the bodily impact among the football players. Therefore, sports participation cannot guarantee physiological body mass and body composition, and it is necessary to prescribe exercise targeting body mass and fat control according to (Pantelis Theodoros Nikolaidis, 2012).

Subjects

The subjects were 163 male soccer players under 21 years from the Algerian football championship participated in the present study. Their average age 19,56±1.22 years distributed into homogeneous groups, according to them, body fat percent categories. Tested by saving tests (Body Fat Percentage-Abdominal circumference – Modified Bass Test of Dynamic Balance and standing balance). To exclude the effect of sex on data, all subjects are male. None of the subjects had historically of inscrutable visual defects, vertigo, motor paresis or sensory deficits. Participation in this study was voluntary to attend experience. Informed consent was obtained, and coaches signed a document.

Testing Protocol

Our choice is based on the indication that generally having poor posture and mechanics, the abnormal posture becomes apparent. Whereas examining posture in a static position allows an unobstructed view of all postures elements. Where the correct posture minimises stress on muscles, bones, and joints while incorrect posture places abnormal stress on these structures (Shultz et al., 2015).

✓ **Measurements of standing balance(SB)**

• Objective

To monitor the development of the pupil's ability to maintain a state of equilibrium (balance) in a static position. See Fig 1.

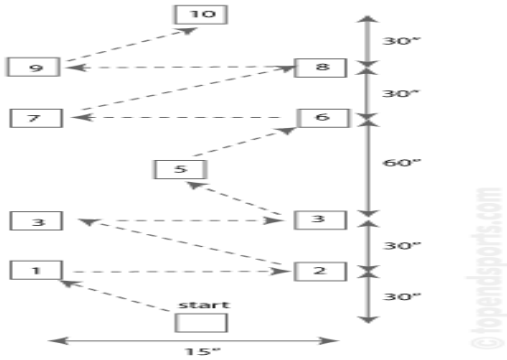
- **Required Resources**

To undertake this test, you will require:

- Warm dry location – gym
- Stopwatch
- An assistant
- How to conduct the test:
- The pupil stands comfortably on both feet with their hands on their hips
- The pupil lifts the right leg, places the sole of the right foot against the side of the left kneecap and closed both eyes
- The assistant gives the command "GO", starts the stopwatch and the pupil raises the heel of the left foot to stand on their toes
- The pupil is to hold this position for as long as possible
- The assistant stops the stopwatch when the pupil's left heel touches the ground or the right foot moves away from the left knee
- The assistance records the time

✓ **Modified Bass Test of Dynamic Balance(DB)**

This multiple hop test requires that 1-inch (2.5 cm) tape squares are laid out in a course as shown in Figure 1. The subject is required to jump from square to square, in numbered sequence, using only one leg. The hands should remain on the hips. On landing, the subject remains looking facing straight ahead, without moving the support leg, for five seconds before jumping to the next square.



Scoring: the result is recorded as either a success or fail. A successful performance consists of hopping to each tape mark without touching the floor with the heel or any other part of the body and holding a static position on each tape mark for five seconds without exposing the tape mark.

➢ As a modification, we remove five seconds before jumping to the next square. Where a child takes his necessary time to jump to the next square.

✓ **Body Fat Percentage (BFP)**

Body fat can be estimated from body mass index (BMI) in the current study we used the formula for children:

Adult Body Fat % = (1.20 x BMI) + (0.23 x Age) – (10.8 x gender) – 5.4

using gender male= 1, female= 0. (Janjic et al., 2016, Mohammed et al., 2016).

✓ **Abdominal tests(Abdo)**

the abdominal test measures the muscular strength and endurance of the abdominal muscles and hip flexors for 1 min recording the number of repetitions practised by the athlete (Dr. C. Ashok, 2008) (Sanjay Parashar, 2015).

Statistical Analyses

Data obtained from the tests shows, on one hand, that our soccer players are allocated into two groups, according to them, Body Fat Percentage Categories, Athletes and Fitness. In another hand, the total sample accepts the normal distribution and homogeneity of all variables chosen to study. Presented as a means ± standard deviation, Shapiro-Wilk and Levene test. The independent T sample t-test was conducted to combine the results obtained from the two groups see Table 1. The relationship between the two groups was analysed by Pearson correlations ®.

3. Results

Table 1. Shows the baseline characteristics of the sample

Variables		N	Mean±SD	Shapiro-Wilk	Sig.	Levene's	Sig.	T	P≤0,05
weight	Athletes	117	63,63±5,37	1,97	0,72	1,48	0,09	-5,06	0,00
	Fitness	48	68,67±6,55						
	Total	164	65,05±6,17						
height	Athletes	117	177,58±4,11	1,96	0,26	0,27	0,70	6,48	0,00
	Fitness	48	172,86±4,37						
	Total	164	176,69±4,68						
BFP	Athletes	117	11,95±1,77	2,92	0,12	1,12	0,54	3,44	0,00
	Fitness	48	15,77±1,93						
	Total	164	13,03±2,50						
WC	Athletes	117	80,66±1,42	1,97	0,56	1,11	0,19	-5,09	0,00
	Fitness	48	89,84±1,37						
	Total	164	87,90±1,11						
DB	Athletes	117	1,02±0,42	1,96	0,62	1,23	0,12	9,68	0,00
	Fitness	48	1,96±0,57						
	Total	164	1,60±8,36						
SB	Athletes	117	4,31±0,35	1,98	0,95	2,03	0,18	10,80	0,00
	Fitness	48	2,44±0,52						
	Total	164	3,29±0,42						
Abdo	Athletes	117	38,22±6,29	1,09	0.08	5,33	0.07	6,19	0,00
	Fitness	48	32,07±3,86						
	Total	164	36,48±6,33						

All. Independent T sample t-test analysed practised are significant at P ≤ 0.05. While in the Table 2. all correlation between BFP & WC with Balance testS and Abdominal test are a strong negative, in the opposite of BFP with WC.

Table 2. Shows the correlations between the variables and balance string lamb posture

R: P≤0,05		BFP	WC	SB	DB	Abdo
BFP	Correlation the Pearson	1	0,943**	-0,907**	-0,804**	-0,230**
	Sig. (bilateral)		0,000	,000	0,000	0,003
WC	Corrélation de Pearson	0,943**	1	-0,818**	-0,800**	-0,225**
	Sig. (bilateral)	0,000		,000	,000	0,004
**. The correlation is significant at the 0.01 level (bilateral).						

3. Discussion

The results of the present study based on the norms elaborate by American Council on Exercise (ACE) as Ideal Body Fat Percentages (Lauren Jawno, Fran Schumer, 2012). Where our sample is categorised between Athletes and Fitness. While the means calculate based on variables selected to study, shows that all comparison practised are in the benefits of athletes category followed by fitness confirmed by Independent T, in less BFP and WC as indicators of the best physical performance(both balance & strength abdominal). View the body fat Ratings, we agree that the sportsmen are not immune from the increased of the intra-abdominal fat area, detected in large WC and more BFP, which conducted to decrease the strength of the buttocks muscles negatively affects habitually body posture and habitually locomotion according to (Luka Tunjic, 2005). However, the waist circumference can evaluate abdominal fat and the waist circumference is associated with an increased risk associated with poor balance at a higher risk of lower limb injuries according to (Haff , G. Gregory , Triplett , N. Travis , 2016). The case of the current study which confirmed: on one hand, that sports participation cannot guarantee effect of physiological body mass and body composition. Seen that (Pantelis Theodoros Nikolaidis, 2012) set that it is necessary to prescribe exercise targeting body mass and fat control. Well, on another hand, the increase of Intra-abdominal fat area affects the posture/balance cholesterol according to Balance ability to keep an upright posture according to (Higgins et al., 2006). In addition, the body gain can lead to an increase of abnormalities in posture, which lead to the decrease of muscle coordination, control of movement, balance, and awareness of body position (Sandy Fritz, 2013) record in our case in the benefit of the athletic with less BFP and WC.

From the proof, we agree that agency for the control of weight changes recurred from the coach to improve muscular strength and flexibility and decreasing body fat (Jerrold S. Greenberg, George B. Dintiman, Barbee Myers Oakes, 2004) as program body weight management body fat loss, as necessity of exercise abdominal muscles at least 30 minutes daily programme training session, as well as evaluation training. Moreover, this practice is absent in Algeria football clubs, where our players are selected by the traditional method based on the "gaze of coach". While (Mohammed et al.,2016) set the weakness of the traditional method is in Body Fat, which cannot be predicted with the naked eye. From the above, our results line with evidence that practice of football requires the follow-up on the progress of the players by an evaluation program that tracks the change of the weight and its relation to physical performance. The case of this study, which shows that more BFP and large WC conducted to poor posture related to back pain as health risks and poor posture/balance control as physical performance.

Conclusion

Our findings support our hypothesis that intra-abdominal is fat body fat gain with large WC conducted to fatness confirmed by medical Algerian studies in general population (Bray, Bouchard, 2014). While the current study report, that increased Intra-abdominal fat, influence movement ability and postural control capacity and conducted to poor posture, fatigue, pain muscular tension and poor muscle tone.

From the moment that this part of spine supports most of the body's weight, the current research recommended, the evaluation of body fat and waist circumference related to physical fitness are an important tool to develop proper exercise programs. While the balanced posture requires more energy, that Gymnastic seance activities develop strength, balance, speed, suppleness, stamina and core body skills, as well as posture balance and harmony of the body through core muscle, stabilised posture to make the right posture). While these practices requests from our coaches, in on hand to integrate more than 15–20 min to performing body alignment as practice in weekly Soccer Sessions. Well, on the other hand, the necessity to evaluate body mass and body fat as a control of weight related to optimal performance.

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