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The influence of verbal encouragement on corporal stability during the traditional frontal plank exercise in young health adults: a pilot study

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ABSTRACT

Background: It's known that the frontal plank exercise presents a greater demand of the biomechanics stability and it is largely prescribed and used during the practice by the health professionals, known the verbal encouragement influence on corporal stability through the professional feedback can contribute positively in the clinical, social and scientific field. **Objectives:** Verify the verbal encouragement influences on corporal stability during the traditional frontal plank exercise in young health adults. Methods: Subjects were selected in an intentional non-probabilistic way, constituting a sample of young male adults, with normal body mass index, moderate to advanced self-reported physical activity level and with, at least, six months of previous resistance training experience. Participants were instructed to perform the traditional frontal plank for 30 seconds keeping all the items in the description of the technique, no command was given besides the following verbal incentives: "Contract, stabilize, force, maintain and force". After the execution, the professional self-reported his perception of body stability, writing down his answers on the control form. **Results:** The sample consisted of 10 participants, with a mean age of 30.6 years (±4.03). All male, white and with no history of trauma/injury. For individuals with less than one time of weekly physical exercise, verbal encouragement showed a positive response in the perception of body stability. As for the remainder, who practiced physical exercise with greater recurrence, the evaluator's perception of high stability was given both with and without verbal encouragement. **Conclusion:** This pilot study showed that in individuals with less time of weekly physical exercise, verbal encouragement showed a positive response in body stability, changing from moderate to high. But, the individuals with more time of practice, the verbal encouragement showed no response in the perception of body stability.

Keywords: Exercise; Physical therapy; Isometric exercise.

BACKGROUND

Verbal encouragement during isokinetic assessment for knee flexors and extensors showed improvement in muscle power, activation, and endurance[1]. Regarding electromyographic assessment, verbal encouragement improves abdominal muscle activation during crunch exercise in healthy individuals[2]. Calatayud et al. report that different verbal stimuli brought about better electromyographic responses during a maximal voluntary isometric contraction[3,4]. However, to date, no studies have been found to verify the influence of verbal encouragement on body stability. in the frontal plank exercise through professional feedback, where, in many cases, feedback ends up being the only resource for evaluation in the clinical practice environment.

It is known that the traditional frontal plank exercise presents a greater demand for biomechanical stability and that it has been widely prescribed and used in the practice of health professionals[5]. To perform the frontal plank exercise, the individual needs to remain in the prone position, with the spine in a neutral position, posterior pelvic tilt, and body weight supported on the forearms and feet, which should remain shoulder-width apart[6,7]. According to Oliva-Lozano[6,] the front plank promotes increased muscle strength. of the center of the body, better known as the "core"[8] which involves several muscles, including the rectus abdominis and external oblique muscles, which according to Bergmark[9] are important muscles to maintain trunk stability and important to assist in the reduction and prevention of low back pain[9,10].

Strengthening the core is widely used to improve muscular endurance and physical sports performance[11], thus reducing the risk of lower limb injuries and improving performance[8]. Furthermore, it is known that exercises that provide greater activation of the "core" result in more excellent stability of the trunk and physical function in the short term[12]. However, the lack of standardization of activation of the muscles involved and of the evaluation methods, becomes a bias for the construction of training programs physical and rehabilitation[5].

Finally, knowing the influence of verbal encouragement on body stability through professional feedback can contribute positively in the clinical, scientific, and social context, since health professionals widely use the traditional front board. The contribution is related since if the incentive allows a response in body stability in the face of feedback, it is of paramount importance to include the incentive during the exercise as it will provide greater biomechanical recruitment and possibly, with long-term studies, clinical performance, and sporty.

Given the above and the topic's relevance, the present study aims to verify the influence of verbal encouragement on body stability during the performance of the traditional frontal plank exercise in healthy young adults.

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METHODS

This research is an experimental and cross-sectional study, which will observe the exposure of individuals to the factor of interest in a defined time[13].

Sample

The individuals were selected in a non-probabilistic and intentional way, residing in Greater Florianópolis, and constituted a sample of 10 young adult male participants, with a body mass index (BMI) within the normal range, with a self-reported level of physical activity from moderate to advanced. and with at least six months of previous resistance training experience. In addition, individuals who did not perform the physical exercise in the 24 hours before the collection were included in the research.

Individuals with low back pain, and the presence of injury to the hip, spine, or lower limbs who required surgery in the last year were excluded from the study.

Data collection procedure

After approval by the Ethics and Research Committee with Human Beings of the University of the State of Santa Catarina (UDESC), under opinion number 5,085,280, participants were recruited, and were instructed on the research objectives and data collection procedure. Dice. After accepting to participate, the individual read and signed the Free and Informed Consent Form. For individuals who meet the established criteria to participate in the research, a meeting was scheduled and an evaluation was carried out.

The research was carried out on the premises of a Sports Training Center in Greater Florianópolis. Participants were instructed to wear comfortable, sporty clothes and not to wear shoes to avoid the influence of different types. Then, the evaluation form was filled out, and, afterward, the individuals performed a submaximal warm-up for three minutes on a stationary bicycle while observing an image with the instructions of the technique of execution of the exercise, to become familiar with it.

Then, the simple randomization method was performed, by drawing lots, to decide whether the first series would be with an incentive or without. Being with an incentive in the first, after three minutes where he remained seated in a chair, the individual performed the whole collection procedure again, but without incentive and so vice versa. Then, the individuals were instructed to perform the traditional frontal plank exercise for 30 seconds, seeking to maintain all the items in the description of the technique, no command was given other than verbal encouragement, which consisted of motivating the participants to perform in the best way. possible, where it was started at 5 seconds of exercise execution, being renewed every 5 seconds in the following sequence: “Contract, stabilize, force, maintain and force”, with the last being fired at 25 seconds of the test, until the end of the test. exercise for 30 seconds.

During the execution of the exercise, the professional evaluator graduated in Physiotherapy from the Universidade do Estado de Santa Catarina - UDESC/CEFID with six months of clinical practice, self-reported his perception of body stability during the traditional frontal plank exercise with and without encouragement. verbal through a control sheet prepared by the researchers.

The form consisted of the participant's number, the description of the exercise according to Oliva-Lozano[6] and Youdas[7] and the following items, in which the evaluator must choose only one option in relation to the execution of the board:

a) Traditional frontal plank exercise performed with low stability, complying with the described items of the exercise for less than 50% of the time.

b) Traditional frontal plank exercise performed with moderate stability, complying with the described items of the exercise for more than 50% of the time.

c) Traditional frontal plank exercise performed with high stability, complying with all the described items of the exercise for the entire period of time.

At the end of performing the traditional frontal plank exercise with and without verbal encouragement, the professional self-reported his feedback regarding body stability during the exercise, writing down his answers on the control sheet. It is worth mentioning that the evaluator remained facing the exercise. After performing the exercise and self-report, the data collection procedure was finally carried out.

Statistical analysis

The program used for the statistical analysis was the Statistical Package for the Social Sciences (SPSS) version 20.0 for Windows. Descriptive statistics with mean and standard deviation distribution, in addition to simple and relative frequency, were used to characterize the analyzed variables. The influence of verbal encouragement on body stability during the performance of the traditional frontal plank exercise in healthy young adults was qualitatively analyzed.

RESULTS

The characterization of the sample is shown in Table 1. The mean age of the participants in this study was 30.6 years (±4.03). All were male, white, and had no history of trauma/injury. The mean BMI was 23.7 (±0.65) and the participants remained, on average, for 84 seconds (±27.57) performing the front plank. The average weekly physical exercise practice was 3.5 times a week and the average physical exercise practice in previous years was 4 years.

Table 1. Sample characterization.

Variables	Total sample (n=10)
Age X (DP)	30,6 (4,03)
Sex f (%)	
Male	10 (100,0)
Feminine	0
Race f (%)	
White	10 (100,0)
Not white	0
BMI X (DP)	23,7 (0,65)
Weekly physical exercise X (DP)	3,5 (1,18)
Previous physical exercise (ages) X (DP)	4,0 (1,63)
Trauma history/Injury f (%)	
Yes	0
No	10 (100,0)
Maximum time on the board (seg) X (DP)	84,0 (27,57)

***Note:** X=mean; OD= standard deviation= simple frequency; sec=seconds.

The influence of verbal encouragement on body stability during the traditional frontal plank exercise is shown in Figure 1.

For the two individuals who had less time for weekly physical exercise (twice a week), verbal encouragement showed a positive response in the perception of body stability, changing from moderate to high stability. However, for the other individuals who had a long time of weekly physical exercise (above three times a week), the verbal encouragement did not show a response in the perception of body stability by the evaluator.

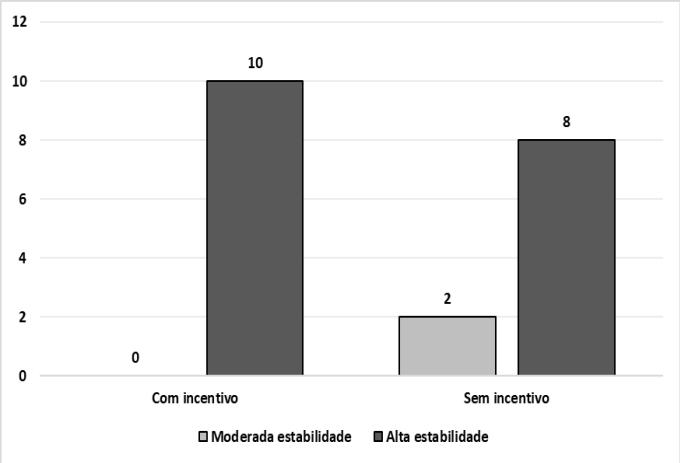

Figure 1. Influence of verbal encouragement on body stability during the traditional frontal plank exercise.
***Note:** Source: Author himself, 2022.

DISCUSSION

The objective of this study was to verify the influence of verbal encouragement on body stability during the performance of the traditional frontal plank exercise in healthy young adults. And, the results of this pilot study showed that for the individuals who had less time for weekly physical exercise, the verbal incentive showed a positive response in the perception of body stability, changing from moderate to high stability. However, for the other individuals who had more time for weekly physical exercise, the verbal incentive did not present a response in the perception of body stability by the evaluator.

According to Roschel[14], the training and experience of practicing a given exercise influence motor learning. Thus, it is understood that for the individuals who had less time for weekly physical exercise, the verbal incentive presented a positive response in the perception of body stability, prevailing the motivational aspect of the incentive over the training of the motor act in question.

According to Andreacci[15], verbal encouragement provides better results in stress testing, as well as improving maximal strength and maximal movement velocity during isometric and dynamic contractions[16,17]. However, the findings of our study showed that in the individuals who had more time for weekly physical exercise, the verbal incentive did not present a response in the perception of body stability by the evaluator and, we believe it is related to the experience, training, and learning of the motor act or, a possible methodological limitation that would be the assessment of body stability only through the perception of the evaluator or because the execution time on the

front board of 30 seconds was lower than the maximum time that they were able to remain in the exercise.

Regarding studies with verbal encouragement, more studies were found in the English language and the terms used as incentives may not make the same sense in translation into another language and culture. The present study created a sequence of incentive words adapted to Portuguese and Brazilian culture, replacing the English words "fast" and "fast and hard" which are incentives that brought relevant results in the muscular activation of hip extensors in an investigation of Rendos[1] for words commonly used in Brazilian clinical practice: “Contract, stabilize, force, maintain and force”, only one of them being applied every 5 seconds of exercise execution, according to the study by Andreacci[15] who observed that more frequent verbal encouragement provided significantly greater maximal effort on a maximal treadmill test compared to a maximal test where no verbal encouragement was given or with infrequent encouragement (every 180 seconds).

Regarding the traditional frontal plank exercise, the choice was made due to the lack of studies on verbal encouragement in exercises with greater demand on the central muscles ("core"), which according to McGill[18] works differently from the muscles of the limbs, because the core muscles usually contract, tensing the trunk in such a way that all muscles become synergistic. Furthermore, according to Stuart M Lee, Benjamin C. Y.; McGill[11] in a long-term protocol, isometric exercise for core training is superior in terms of increase in passive stiffness compared to dynamic exercise, and this is important because the increase in core stiffness increases the ability to load-bearing and reduces injury rate.

The choice of the male audience for the sample was to avoid factors of the female hormonal cycles influencing the results, since the exercise practiced regularly can lead to menstrual alterations and, it is known that 10 to 20% of female athletes and 5 % of non-athletes show alterations in their hormonal cycle[19] and, according to the study by Kami[20], functional performance was significantly worse in the menstrual phase, when compared to the ovulatory and luteal phases. In addition, the participants were physically active so that they could perform the frontal plank for 30 seconds, and those who had a previous injury were in the exclusion criterion because the injury could also influence the correct execution of the exercise.

Finally, we suggest that further research be carried out in this area and that the exercise execution time, the evaluation instrument, and the sample number, which ended up being a limitation of our study during the statistical analysis of the data, be taken more into account. transposing the study to a descriptive analysis of the results only. In this way, we believe that future research can help in the construction of clinical and sports training strategies.

CONCLUSION

This pilot study showed that for individuals with less time for weekly physical exercise, verbal encouragement showed a positive response in the perception of body stability, changing from moderate to high stability. However, for individuals with longer time of weekly physical exercise, verbal encouragement did not present a response in the perception of body stability.

Authors' contribution: Costella T– Data analysis; Correction; Drafting the article. Martins TB – Data collection and interpretation; Drafting the article. Medina AG – Data collection and interpretation; Data analysis; Drafting the article. Botti MSA – Drafting the article. Parizotto P – Drafting the article. França MED – Drafting the article. Santos GM – Data analysis; Corrections; Drafting the article.

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