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Original Article Research

The Effects of Increased Intensity and Number of Repetitions of Training on SJFT in Juniors and Cadets

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Abstract

This study aims to determine the effects of a program based on a progressive increase in the number of nage-komi repetitions (throws) on a specific judo fitness test (SJFT). The research was conducted on a total of 20 respondents. In SJFT for research purposes, 12 variables. Descriptive statistics and paired t-tests for dependent samples of initial and final testing were used for data processing. The results of the study showed significant statistical deviations in the number of throws in the first 15 seconds, with the pulse measured immediately after testing and the SJFT index (p <005). There is a noticeable need for a table to classify SJFT results for young judoists. Based on the obtained results, we can conclude that the programmed activity had positive effects on the results of the SJFT, ie that the index was statistically significantly lower in the final than in the initial testing. Taking into account the results obtained, calculated by the SPSS 22 t-test for dependent variables, the values of the young judoist index and the values of the senior index show noticeable differences. While their results can be classified into appropriate categories, the results of young judoists can be classifieclassifiedrity, under, ad and the rest as very bad. Some results could not even be ranked, so we conclude that it is necessary to make tables for classifying the results of young judoists. The obtained results can be used as guidelines for more efficient programming of the training process.

Keywords: cadets, judo, juniors, SJFT test, training.

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1. INTRODUCTION

To properly master all the techniques in judo, it is necessary to master the basic entry, which is similar to all techniques (Rađo, 2001). Judo is a sport of motor structure, ie a sport

where the acyclic way of movement is present, and psychomotor traits are manifested in complex conditions. The judo technique is a system of rational movements and specialized movements that are manifested on different levels, such as automated movements (throwing), conditionally automated movements (cheating movements), and parts of the complex of a certain movement. All this requires good dynamic stereotypes of gripping and throwing, but also a good ability to effectively reorganize these dynamic stereotypes, ie to directly create new programs of offensive, defensive, and counter-offensive activities during combat (Rađo, Kajmović & Kapo, 2001). A high level of physical fitness and strength, with good fatigue tolerance, are necessary prerequisites for competitive success since judo is characterized by alternating activities of maximum intensity of 15-30s and rest of about 10s (Sterkowich & Franchini, 2000). SJFT is a very useful tool in sports that can identify an individual and his current level, compare with previous or include in future research, and just as it can serve the purpose of assessing the condition of athletes can serve in rehabilitation, the coach can compare results with those before injuries, etc. SJFT has proven to be accurate in distinguishing judo fighters of different levels. In a study (Sterkowicz & Franchini, 2001) with 80 subjects divided into two categories under and over the age of 21, they found a significant difference in heart rate 1 minute after the test and in the index, in favor of the older group. After that, the same groups were divided into 2 new groups based on weight, above and below 81 kg, where the number of throws and the index was statistically significant in favor of the lighter group. Due to the continuous load, which alternates between the engagement of aerobic and anaerobic mechanisms of the organism, the judoist undergoes a specific training process to increase functional abilities. In judo, competitors usually have a larger number of fights in one day (Bratić et al., 2007). Judo is an explosive sport that requires high-intensity strains, but also well-developed aerobic endurance. Judo belongs to the group of martial arts. Each judo fight lasts five minutes of pure time. In the competition, each fighter usually participates in five fights, unless he goes to the rematch, where he has a maximum of two more fights. All fights in one category are held during one day, which is a great effort (Bratić, Nurkić & Stanković, 2011). Training requires high demands with a variety of physical skills, including aerobic and anaerobic fitness, muscular strength, and endurance of muscular strength (Bonato et al., 2015; Franchini et al., 2013; Franchini et al., 2011a). Judo is a martial art, a spiritual discipline, which is often used for recreational purposes. It requires well-developed cognitive abilities, physical fitness, and great discipline. Intellectual abilities influence the process of learning and mastering complex motor movements (Peset et al., 2013). It is necessary to know everything about the body, as well as about the upper and lower extremities, for the effect of training and the competition itself to be as good as possible (Del Vecchio et al., 2014a). Motor skills, especially hand strength, are important for judo success (Miarka, et al., 2014). Training should be regular and include daily checks to get the best results. Adequate training methods need to be applied to obtain feedback on the physical condition of judokas (Branco et al., 2017a; Branco et al., 2013; Branco et al., 2016). The process of monitoring every athlete is a success because in that way we have feedback on his current condition, as well as his progress. We must know how to recognize the strengths and weaknesses of each athlete, adjust the training programs, and achieve the greatest possible effect. These are all reasons that point to the need for normative tables of judo performance (Franchini et al., 2009; Sterkowicz-Przybycień and Fukuda, 2014), isometric and dynamic judo chin-ups Branco et al., 2017b), and generic tests of maxima with one by repetition (Aruga et al., 2003). Judoists must develop their strength to the maximum, muscles, and endurance, to achieve top results in high-level competition. Many tools, different

ways of working, working methods, principles, and training methods are applied to achieve well-developed physical conditions (Franchini et al., 2014). Various tests in judo are being developed to improve the organization and realization of the training itself. To this end, various judo-specific tests have been developed (Azevedo et al., 2007; De Azevedo et al., 2014b; Franchini et al., 2011b; Lidor et al., 2006). Functional abilities are related to the technique of performing elements in judo. Improving functional abilities affects the improvement of the performance of techniques in training, as well as in the competition itself. Todorov et al. state that increased anaerobic capacity with a decrease in body weight allows a large number of actions during the fight, while high values of aerobic capacity accelerate the recovery process between fights (Todorov et al., 2013). The Special Judo Fitness Test (SJFT) was proposed by Sterkowicz (1995) as the most commonly used test to evaluate judokas (Franchini et al., 2005). Classification tables for judokas have been developed, which allows coaches to classify athletes accordingly (Branco et al., 2017b). Research has shown that morphology did not affect the results of the best-placed competitors at the national level. Competitors who had a higher percentage of fat performed worse (Cooper and SJFT test). Respondents who had a larger volume also showed greater strength. These indicators can help coaches to better prepare, develop and improve their competitors (Crnogorac and Mekić, 2012). Physical fitness and anthropometry are necessary to achieve top results in judo competition. A table for the classification of performance in SJFT was made. Franchini et al., 2006, surveyed 141 respondents to produce tables for the classification of SJFT results. The table that was created is a tool that will help when programming training. Success in judo depends on many factors, including functional abilities, which are responsible for the functioning of individual organs and organ systems. To achieve even greater success, it is necessary to control the load in training and competition (Koprivica, 2018). Competitors must develop the desire to win in as many fights as possible, to give their maximum - Ippon point and thus respect the principle in judo which requires maximum efficiency with minimum energy in training and competitions and does not underestimate the value of Waza-ari points and victory with the help of penalties (Kajmović and Bečić, 2021). Research has shown that morphology did not affect the results of the best-placed competitors at the national level. Competitors who had a higher percentage of fat performed worse (Cooper and SJFT test). Respondents who had a larger volume also showed greater strength. These indicators can help coaches to better prepare, develop and improve their competitors (Crnogorac and Mekić, 2012). Physical fitness and anthropometry are necessary to achieve top results in judo competition. A table for the classification of performance in SJFT was made. Franchini et al., 2006, surveyed 141 respondents to produce tables for the classification of SJFT results. The table that was created is a tool that will help when programming training. Success in judo depends on many factors, including functional abilities, which are responsible for the functioning of individual organs and organ systems. To achieve even greater success, it is necessary to control the load in training and competition (Koprivica, 2018). Competitors must develop the desire to win in as many fights as possible, to give their maximum - Ippon point and thus respect the principle in judo which requires maximum efficiency with minimum energy in training and competitions and does not underestimate the value of Waza-ari points and victory with the help of penalties (Kajmović and Bečić, 2021).

2. METHOD

2.1 Participants

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For this research, the sample of respondents was composed of a cadet and a juncadetseam of the judo club "Una Bihać". The number of respondents is 20, of which 10 cadets and 10 juniors took the tests. There were a total of 78 athletes in the judo club "Uno Bihać". The selection criteria were their age. The sample of respondents consists of 4 respondents who have been training for 2 to 3 years, 10 respondents who have been training for 5 years and more, and 6 respondents who have been training for 8 years and more. Respondents from the group of cadets attend 8 to 13 competitions a year and from the group of juniors 10-15 competitions, including European cadet and junior cups and championships. All measured subjects were present at 90% of the training during the specific training process. The research was by the Helsinki Convention and the respondents participated voluntarily.

2.2 The sample of variables

In the SJFT (special judo fitness test), for the research, 12 variables were determined in 2 groups. Group of variables of initial testing: Number of throws in the first 15 seconds - Ia, Number of throws in the first 30 seconds - IIa, Number of throws in the second 30 seconds - IIIa, Number of heartbeats immediately after work - Hra, Number of heartbeats 1 min after work - HR1mina, SJFT index - index. Group of variables of final testing: Number of throws in the first 15 seconds - Ib, Number of throws in the first 30 seconds - IIb, Number of throws in the second 30 seconds - IIIb, Number of heartbeats immediately after work - HRb, Number of heartbeats 1 min after work - HR1minb, SJFT Index - index.

2.3 Research Desing

The SJFT test battery was made by Sterkowicz in 1995 and it has been validated reliably. SJFT (Figure 1) is divided into three periods: 15s (I), 30s (II), and 30s (III) with rest intervals of 10 seconds in between. During each period, the tori (the one doing the test) throws two partners (uke A and B) who are 6 meters apart as many times as he can on the ippon-seoi-nage technique (manual throw).

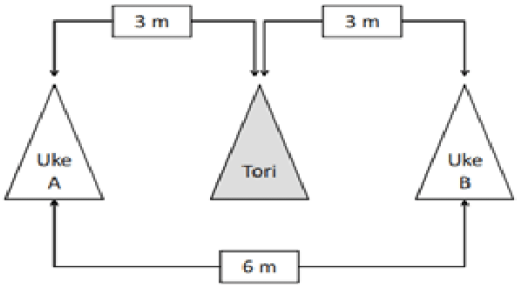

Figure 1. SJFT scheme

(Sterkowicz, 1995)

Uke A and uke B should be the same height and weight as the tori. The pulse is measured immediately (HR) and 1 minute after the end of the test (HR1min). The ability to perform a large number of throws in this short period is mostly associated with anaerobic capacity, while the recovery of heart rate (pulse) is associated with aerobic capacity. And the SJFT index is calculated by dividing the pulse by the number of throws (Equation 1).

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$$index = \frac{\text{HR} + \text{HR1min}}{\text{ukupni broj bacanja}}$$

Equation 1. The calculation of the SJFT index

A lower index represents a better result in this test. Performance in this test can be improved by increasing the number of throws, which would mean an increase in anaerobic power. Lowering HR at the end of the test would mean improvement in the cardiovascular system and lowering HR 1 minute after the test would refer to improving aerobic power. The choice of ippon-seoi-nage technique was chosen for two reasons, under one this technique requires only one hand to perform and immediately prepare the tori to run to the other side, and under two itsit'spresented in competitions.

Table 1.

Classification norms in SJFT

Classification	Variables			
	Total of throws	HR after (bpm)	HR 1min after (bpm)	Index
Excelent	≥29	≤173	≤143	≤11.73
Good	27–28	174–184	144–161	11.74–13.03
Average	26	185–187	162–165	13.04–13.94
Poor	25	188–195	166–174	13.95–14.84
Very Poor	≤24	≥196	≥175	≥14.85

Source: Franchini et al., 2009

2.4 Data Analysis

Descriptive statistics and paired t-tests for dependent samples of initial and final testing were used for data processing. The statistical program for personal computers SPSS for Windows version 22 was used for data processing.

2.5 Work program

Based on the results of the SJFT test, which we received at the beginning, and the feedback from the respondents themselves, a training plan and program for 22 days were made. The training lasted one month, ie 22 working days, of which 20 days were used for training and 2 days for testing. Testing was conducted at the beginning (initial testing) and the end of the training (final testing). The 20 working days scheduled for training are divided into 4 phases. The first phase is scheduled for the first 5 working days of training from Monday to Friday. The second phase is scheduled for the other 5 working days of training from Monday to Friday. The third phase is scheduled for the third 5 working days of training from Monday to Friday. The fourth phase is scheduled for the fourth 5 working days of training from Monday to Friday. All weekends are scheduled for vacation. In each of the four mentioned phases, there was an increase in the intensity of training. Respondents gradually adjusted to each training, ie each phase of training, and especially at the beginning of the first phase of training. In the first phase, the number of throws per training session did not exceed 100. The speed of entry increased. In the second phase, the number of throws per training session lasted from 80 to 90 minutes, and

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the number of throws ranged from 90 to 114 per training session. In the third phase, the number of throws increased to 115 and ranged to 125. In the last week, the number of throws was 140. During the entire program, the principle of individualization for each respondent was respected. The training was held in the judo hall, which was lined with tatami. The planned program was intended to improve the results of the SJFT test. The training plan and progrwerewas made based on the principles of gradualness and systematicity, where the intensity of the load gradually increased according to the phases of training, as well as the number of page-kopageuchi-komi, strength exercises, and strictly regulated vacations. The whole process is adjusted to the age of the respondents, ie their age. All respondents were in the training process and competed in judo. Through the planned plan and program, there was an improvement in functional abilities and physiological functions. Training in all phases was the easiest at the beginning of the week, and the most difficult in the middle of the week, because the intensity gradually increased every day, as well as the number of throws. It is for this reason that the recovery process was planned, which lasted 2 days in each phase, and that is during the weekend. Throughout the entire process, care was taken to motivate the respondents, their safety and protection, and the phase of rest and recovery to avoid overtraining, as well as the dehydration of the respondents.

Table 2. *Training example (in week 3)*	Bihać
Introduction:	Light running and movement exercises 4 min Warming up in place 6 min Acrobatics and falls 5 min
Preparatory part of the class:	10x10 Uchi-komi 1 min (O) 10x4+1 uchi-komi+nage-komi 1 min 3x3 Ouchi-gari, Kochi-gari, osoto-gari 2 min
Main part:	Nage-komi tabata 2x5 min (20s nage-komi,10s rest) / 1 min (O) 3x3 nage-komi / 1 min (O) 5x5 uchi-komi with emphasized tsukuri
Final part:	Stretching and loosening exercises
Training time: 09:00h	Location: judo gym

Training duration: 80-90 min	Intensity: medium to submaximal
Notes:	It was not necessary to adjust the rest time.

Table 3.

The duration of the training process

Month	Weeks	Days	Days a week	Rest days	Duration of each training
1 month	4 weeks	20 days	5 days (from Monday to Friday)	2 days (weekend)	80 – 90 minutes

3. RESULTS

Table 4 shows the mean values for all variables as well as their deviations. In the obtained results we have noticeable differences between the initial (initial) and final (final) testing. What is important for the mentioned research is the correlation, ie the comparison of pairs six (Table 4). What is important for this research is the correlation of pair 6 (Table 4), where the average index for SFJT in the initial testing was 14.31, and in the final 13.58. A difference of 0.72 in average values is also noticeable, with a standard deviation of 1.04.

Table 4.

Display of mean values and standard deviations for each variable separately

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	15 s	5,76	20	1,17	,25
	final 15s	6,10	20	1,37	,30
Pair 2	A30 s	9,76	20	1,30	,28
	final A30s	9,95	20	1,24	,27
Pair 3	B30 s	9,43	20	1,36	,29
	final B30s	9,71	20	1,34	,29
Pair 4	Pulse speed	192,52	20	6,64	1,45
	final pulse speed	193,43	20	5,24	1,14
Pair 5	Pulse speed after 1 minute	160,33	20	11,85	2,58

	Final pulse speed after 1 minute	158,81	20	10,59	2,31
Pair 6	Index SFJT	14,31	20	2,47	,53
	final index SFJT	13,58	20	1,93	,42

Table 5 shows a paired t-test conducted to verify a statistically significant correlation between the SJFT index of initial testing, before the 20-day training process planned by the plan and program, and final testing after testing. The results of the paired t-test where, t (20) = 3.16, p <0.005, show that there was an increase in the SJFT index in the period from initial (M = 14.31, SD = 2.47, N = 20) to final (M = 13.58 , SD = 1.93). The obtained results show an increase in the index on average M = 0.72, with 95% confidence and standard deviations of 0.24 as the lowest value and 1.19 as the highest. A lower index value is considered a better result. In Table 5, the variables of pair 6 (SJFT index) can be singled out, as it shows an increase in values. There are no statistically significant deviations in other indicators.

Table 5.

Paired t-test for men

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	15 s - final 15s	-,33	,96	,21	-,77	,10	-1,58	20	,13
Pair 2	A30 s - final A30s	-,19	,98	,21	-,63	,25	-,89	20	,38
Pair 3	B30 s - final B30s	-,28	1,05	,23	-,76	,19	-1,24	20	,22
Pair 4	Pulse speed – final pule speed	-,90	2,52	,55	-2,05	,24	-1,64	20	,11
Pair 5	Pulse speed after 1 minute - final pulse speed after 1 minute	1,52	5,76	1,25	-1,10	4,14	1,21	20	,24
Pair 6	Index SFJT - final index SFJT	,72	1,04	,22	,24	1,19	3,16	20	**,005**

4. DISCUSSIONS

In judo, the load is large with a large number of interruptions during the work itself. Judo fights last between fifteen and thirty seconds with a break that lasts about ten seconds on average. Recent research shows that the duration of activities is shorter than before. This can be explained by changes in the rules in recent years. All respondents included in this research are young judokas who are in the training process and the competition. Slightly elevated values in variable 1 (15s-final 15s) were present in the final test, but there were no statistically significant

changes in the t-test. After the implemented work program, there was an increase in the average value of the SJFT index for only one month, or 22 working days for M = 0.72, where it was 14.31 at the initial test and 13.58 at the final. Which, according to Franchini's classification tables (Table 1), would be classified as average, bad, and very bad. Given the inconsistency of research results with the classification table, their ranking as bad / very bad, there is a need for a new classification table that will adequately rank the results of the SJFT test of young judokas.

After research and testing in the SJFT test, the juniors had a higher number of throws and a lower final heart rate and index, and higher performance in the dynamic chin-up test compared to the cadets. Juniors performed better in the SJFT and higher in the chin-up test compared to the cadets. Athletes who were the best also had the best results in all tests (Franchini et al., 2004). Competitive judo is based on throwing techniques, which are divided into manual, side, foot, and sacrificial techniques, but also on the ground technique, which includes holding grips, hand levers, and choking. There are no punches in sports judo. The duration of the fight is limited to 4 minutes in the senior competition, while for the younger age categories the time of the fight is limited to 3 and 2 minutes, respectively. Success in judo requires good physical fitness, along with technical and tactical skills, and well-developed motor skills, such as strength, endurance, speed, and the like. In top athletes, there is a connection between these motor skills, which is difficult to develop, and it primarily depends on the athletes, their needs, and the sport itself. Through training, skills are developed to create a basis for specialized training (Franchini et al., 2005). In the match, the aerobic system enables the application of short, fast, and explosive outbursts of maximum strength, and the aerobic system enables athletes to withstand effort during combat, but also to recover with less effort or during rest (Crnogorac and Mekić, 2012). Kapo et al. (2015) proved the benefit of SJFT as a tool for detecting asymmetry in judo movement (when performed in both directions) and the importance of bilateral judo development. The sample of respondents included 9 respondents (men) aged 13-14, the testing procedure was performed according to the standard sample of SJFT. Based on the obtained results, it was concluded that much larger groups of respondents are needed to create better standards that will enable the optimal development of technologies. Katarzyna et al. (2010), conducted a study on 8 juniors using SJFT, analysis of 10 muscle groups, a test of maximum strength, jump height, etc. To compare biomechanical and specific methods of controlling the process of judo training. Katralli & Goudar (2012) are Indian scientists who conducted a study on the training of Indian judoists. Despite this situation, the scientists investigated the relationship between the SJFT index, the volume of 7 anthropometric points, weight, height, and the percentage of fat between 2 groups of respondents. One group consists of 20 judoists who train for 5 <years, and the other consists of 11 respondents with training experience <5 years. The main conclusion of the research is that the difference in the length of training experience is negligible in the obtained results. There is a negative correlation between fat percentage and performance. A recent meta-analysis showed that seniors performed better than junior judoists on the SJFT test (Sterkowicz-Przybycień et al., 2017). Branco et al. (2017b), state that judoists differ in more extreme classifications. Kuvaćić et al. (2017), state that success factors in judo vary depending on body weight. The best judoists have well-developed anaerobic capacity and strength-endurance. The research, which was conducted to compare the performance of juniors and cadets, was conducted to develop classification tables for judo-specific tests for the international level from these ages. Casalas et al. (2017), addressed anthropometric characteristics and their impact on SJFT test results. They researched

judokas who were in the training process and competed. Anthropometric characteristics that influenced the results in the SJFT test are gender, build, body weight, skin folds biceps, and triceps. Data were collected during training held in camps for juniors and cadets from 3 countries (Brazil, Serbia, and Spain). The juniors were better than the cadets in the SJFT test results. They had more throws, a lower heart rate (P = 0.021), a lower index (P <0.001), as well as a higher performance in the dynamic addition test (P <0.001). Based on the obtained results, tables were formed according to age groups and gender. Each of the SJFT parameters in the chin-up judo tests was classified according to gender and age. All these tables can be very useful to all judo coaches, to be able to monitor their athletes or their physical fitness during all phases of the periodization process. Juniors were better than cadets in SJFT and dynamic wrestling grips in judo tests.

Normative data were made based on judokas and juniors from Serbia, Brazil, and Spain. The results of high-level athletes can be assessed based on a 5-point scale used to evaluate athletes during training, but also during recovery. All those involved in the training and recovery process now have a detailed classification made according to gender and age for anaerobic and aerobic fitness that is specific to judo. These tests can be used by trainers to plan training to improve the physical fitness of athletes to achieve top results, but also to plan adequate recovery (Agostinho et al., 2018). This research aimed to determine the effects of additional training, ie increased strength training on the physical fitness of athletes aged 18 years. The research was conducted on a sample of 21 judokas, divided into 2 groups: control and experimental. Athletes were tested in anthropometric characteristics, physical fitness tests, field-specific tests, and SJFT tests. Measurements were presented at the beginning and 8 judokas per group before and after the training process. Both groups were in the same training process. Strength training was conducted three times a week for eight weeks. All measurements were in the competition season. The obtained results showed that there was no difference in height and body weight, as well as in body fat after training (p> 0.05). Better results were achieved in the maximum strength and dynamic judo chin-up test. There was an improvement in the results of the SJFT test, as well as in the number of heartbeats after 1 minute, which represents an improvement in performance for EG. The authors concluded that eight weeks of training was good for improving general and specific performance. This strength program, like all other programs, can help trainers develop strength without changing body weight (Branco et al. 2021). Additional training contributes to the greater physical fitness of athletes, and thus achieves better results. SJFT throws showed better results after training, as well as a higher energy contribution of the SJFT test for the anaerobic and aerobic systems (Francini, 2012). Improvements in the SJFT test can be attributed to additional training, ie strength training performed by judokas, because anaerobic components are worked on through training. This tactic is good for judokas who show lower throwing results in SJFT tests, according to classification normative values (Francini et al., 2015). The increased number of throws in the SJFT test reduces the index, maximizing the performance of judokas. HR 1 minute after SJFT showed lower values after the training period in EG. Stanley, Peake, and Buchheit (2013) and Sardeli et al. (2017) argue that resistance training is not associated with parasympathetic reactivation. Sardines et al. (2017) also argue that resistance training adaptation training promotes increased central artery stiffness. Additional strength training increases functional abilities and respiration (Porter et al., 2015), increasing the activity of oxidative enzymes related to the aerobic system (Tang, Hartman, Phillips, 2006) and skin, as well as muscle fibers (Pesta

et al., 2011). The decrease in HR 1 minute after the SJFT test, after 8 weeks of strength training, can be explained by the aforementioned physiological adjustments. The results obtained emphasize that high-intensity interval training for the lower body using a cycle ergometer can lead to a decrease in HR after SJFT by inexperienced judokas (Francini et al., 2017). The SJFT index can be affected by training, as the total number of throws should be reported after strength training in older judokas (Francini et al., 2015). Based on the obtained results, we can conclude that it is not impossible to include the results of juniors in the senior tables, but most of the results are classified as bad / very bad, which is at the bottom of the classification table. However, there are differences between the body of seniors and juniors, so it would be necessary to separate the results of younger and older ages. The obtained results can be used as guidelines for more efficient programming of the training process, with special emphasis on age (Mekić et al., 2022).

5. CONCLUSIONS

The research and testing were conducted on a sample of 20 respondents, young judokas who practice judo for 3-10 years. Respondents were familiar with the testing procedure of the SJFT test because they were in the training process for several years, but also in the competition. All subjects were tested under the same conditions. The test was valid, according to the entire procedure and the manner of recording and evaluation. This study sought to demonstrate whether increased training intensity and several throws have an impact on SJFT test results. Based on the T-test, we came to the result that there are statistically significant deviations in the obtained data which show that there is an evident need for new classification tables. The results obtained could not be compared with the average values of other research done on seniors. Based on all the above, it can be concluded that the designed monthly program had an impact on the changes, as well as a positive effect on the results of the SJFT test. The index was statistically lower in the final compared to the initial testing. The results showed noticeable differences between the index of young judokas and seniors. The results of young judokas can be classified as bad (minority), and others as very bad. Some results could not even be ranked, which proves our assumptions, and that is that it is necessary to make new classification tables for young judokas. The obtained results are very useful because they can be used as guidelines for more efficient programming of the training process.

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