

TOTAL IMMERSION FREESTYLE AS A DETERMINANT OF FASTER AND MORE ECONOMICAL SWIMMING

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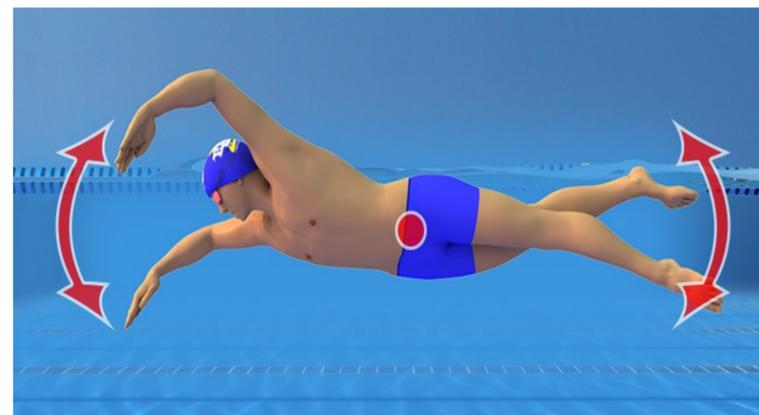


INTRODUCTION AND RESEARCH PURPOSE

The **Total Immersion method** is based on fundamental factors such as balance, streamlining and propulsion. The basic rule of Total Immersion is compatibility with the aquatic environment TI is an effectively structured set of exercises. This method primarily teaches balance and streamlining of the body in the water. It then adds propulsion to these skills. Total Immersion teaches you to swim more economically at any speed, seeking an advantage in stride efficiency, while developing a more effective awareness of pace sense and bringing body and mind together to work towards a specific goal.

The **purpose of this study** is to compare the progression of crawl swimming technique taught students using the traditional method versus the Total Immersion method, and to examine whether swimming with the TI technique is more effective than the traditional technique.

Two groups participated in the research. The first group consisted of 100 students perfecting their crawl swimming with the traditional method (MT), while the second research group consisted of 100 students perfecting their crawl swimming with the TI (MTI) method. Both research groups took part twice in the 4x25m walk test, conducted on a 25m swimming pool. Then, for 4 weeks, one research group perfected swimming with the traditional crawl method, the other with the TI method. After 15 weeks, the 4x25m walk test was repeated in each research group. Time was measured only in the 15m swimming zone, between the turnaround flags. Two stopwatches were used during the research. The first was used to measure the time taken to complete a 15-metre swimming distance and the second to measure the duration of 3 cycles. Also analyses were carried out using the Mann-Whitney U test and the Wilcoxon test.



Pic.1. <https://www.plywajkraulem.pl/technika-total-immersion/>

The illustration shows a swimmer in perfect balance. Its center of gravity is located near the navel and is marked with a red dot. The arrows around the hands and feet show how the swimmer's body behaves in the water.

RESULTS AND DISCUSSION



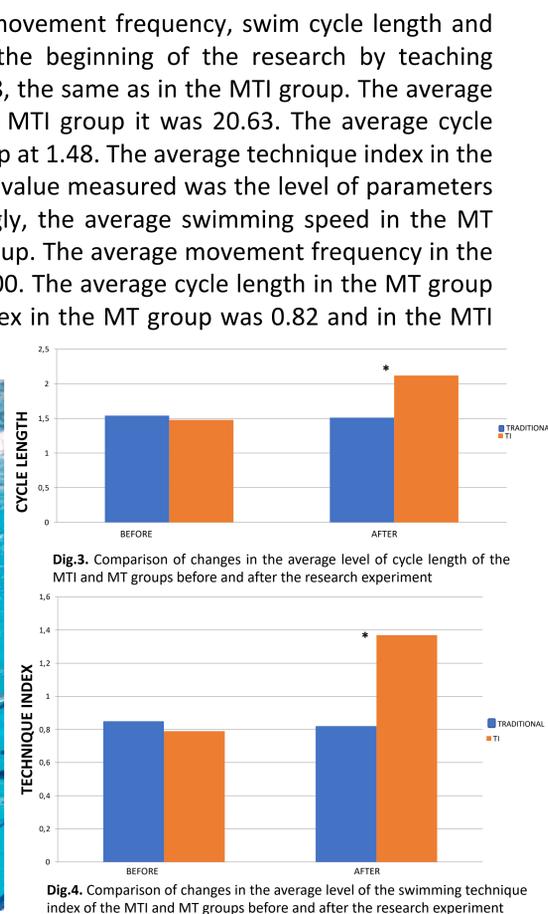
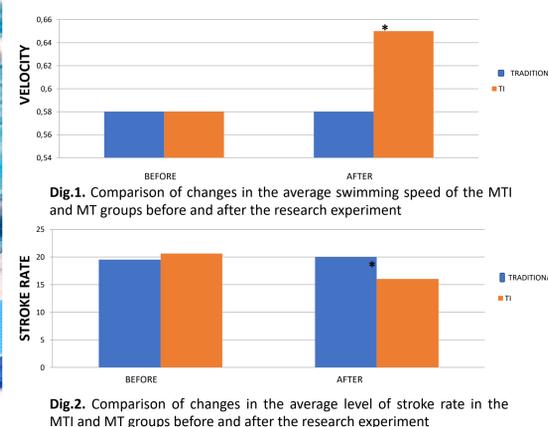
Pic.2. <http://www.kuzniaplywania.pl/kraul-metoda-ti/>

The research measured parameters such as swimming speed, movement frequency, swim cycle length and technique index. The above parameters were examined at the beginning of the research by teaching method. The average swimming speed in the MT group was 0.58, the same as in the MTI group. The average movement frequency in the MT group was 19.50, while in the MTI group it was 20.63. The average cycle length in the MT group was recorded at 1.54 and in the MTI group at 1.48. The average technique index in the MT group was 0.85, while in the MTI group it was 0.79. Another value measured was the level of parameters at the end of the research by teaching method. Correspondingly, the average swimming speed in the MT group remained at 0.58, while it increased to 0.65 in the MTI group. The average movement frequency in the traditional method was 20.00, while in the TI method it was 16.00. The average cycle length in the MT group was 1.51 and in the MTI group 2.12. The average technique index in the MT group was 0.82 and in the MTI group 1.37.



Pic.3. <http://www.kuzniaplywania.pl/kraul-metoda-ti/>

There were statistically significant changes in the results of the examined kinematic variables in the group taught by the traditional method versus the TI method. The group taught by the TI method achieved better speed and the duration of the 3 cycles increased, making the length of one cycle longer. The value of the technique also improved significantly. In the examined variable parameters of swimming technique, TI teaching gave better results. The value of the swimming technique index improved significantly and thus the economy of swimming increased.



Tab.1. Level of parameters at the beginning of the study by teaching method

PARAMETER	TEACHING METHOD	MEAN	SD	RESULT OF THE TEST U M-W	LEVEL OF SIGNIFICANCE
V	Tradycyjna	0,58	0,02	0,44	0,686
	TI	0,58	0,03		
SR	Tradycyjna	19,50	1,00	1,32	0,343
	TI	20,63	1,25		
SL	Tradycyjna	1,54	0,03	1,48	0,200
	TI	1,48	0,06		
SI	Tradycyjna	0,85	0,06	1,48	0,200
	TI	0,79	0,04		

Tab.2. Level of parameters at the end of the study by teaching method

PARAMETER	TEACHING METHOD	MEAN	Odchylenie standardowe	RESULT OF THE TEST U M-W	LEVEL OF SIGNIFICANCE
V	MT	0,58	0,02	2,32	0,029*
	TI	0,65	0,02		
SR	MT	20,00	0,00	2,65	0,029*
	TI	16,00	0,00		
SL	MT	1,51	0,05	2,34	0,029*
	TI	2,12	0,02		
SI	MT	0,82	0,07	2,31	0,029*
	TI	1,37	0,23		

The level of significance of the differences between the means was estimated for the value: * $p \leq 0.05$

Statistically significant differences were observed between the swimming speed before and after the research in the MTI group. Statistically significant differences were shown between the SR before and after the research in the MTI group. Showed statistically significant differences between SL before and after the research in the TI group. Statistically significant differences were observed in the SI value before and after the research in the MTI group.

Tab.3. Level of parameters over subsequent measurements using the Wilcoxon test.

PARAMETER	TEACHING METHOD	VARIABLE	LEVEL OF SIGNIFICANCE
V	MT	1,00	0,317
	TI	1,84	0,66
SR	MT	1,00	0,317
	TI	1,89	0,059
SL	MT	0,45	0,655
	TI	1,84	0,066
SI	MT	0,45	0,655
	TI	1,83	0,068

The last significant mode was a measure of parameter level over successive measurements using the Wilcoxon test. Statistically significant differences were observed between the MT and MTI groups. The variable in swimming speed in MT was 1.00 and in MTI was 1.84. The variable in SR in the MT group was 1.00 and in the MTI group 1.89. The SL variable in MT was at 0.45, in MTI at 1.84. The SI variable in the MT group was 0.45 and in the MTI group 1.83.

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