

DIFFERENCES IN MOTOR TESTS IN ADOLESCENT SWIMMERS OF DIFFERENT AGE CATEGORIES

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(Original scientific paper)

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Abstract

This one labour there is for purpose yes them investigate the differences in motor vehicles abilities where the swimmers adolescents from different adults categories , with special focus on the interpretation on the results from two motor tests : critical speed on swimming (CSS) and broad jump (BJ). The research included 70 respondents (35 male and 35 female swimmers), divided in three adults categories : wound adolescence (10–12 years), middle adolescence (13–16 years) and late adolescence (17–19 years). The results show significant differences in motor vehicles abilities between the adults categories , pri what the older ones swimmers demonstrate improve performance in the swimmers tests (CSS) and broad jumps (BJ). These differences everything owe on the physiological and the motor development , as well as the level on the training . The labor provides valuable directions for coaches and sports teachers in the creation on individualized training programs, customized on the adults specifics and the physical predispositions on the young people swimmers. With integrating on the results in practice , this one labour contributes con optimization on training processes and selection on adolescents swimmers , simultaneously encouraging in more detail research for the connection between motor vehicles abilities and sports results.

Key words: *Swimming, motorized abilities, critical speed on swimming (CSS), broad jump (BJ), adolescents, sports training, physical development .*

Introduction

Swimming represents one from the most complex sports who asks perfect synchronous between motor vehicles abilities , the physical development and the technical performance . How discipline what includes different aspects on strength , endurance , coordination and speed , swimming game key role in the overall physical and motor development on the young people athletes . Especially where adolescents , the period on intense physically growth and development there is significantly influence upon their sports efficiency and capacity . In this one context , motor skills abilities represent basis for the swimmer success , pri what their measurement and analysis everything from essential meaning for understanding on the dynamics on the physical development and performance .

This one labour there is for purpose yes them investigate the differences in motor vehicles abilities where the swimmers adolescents from different adults categories , through application on two key testa : critical speed on swimming (CSS) as indicator for aerobic endurance , and broad jump (BJ) as indicator for the explosive force . These tests everything carefully selected for the sake of their direct relevance for the swimmers performance and their ability yes them reflect the different ones aspects on the physical condition . The research them includes three adults categories: wound adolescence (10–12 years), middle adolescence (13–16 years) and late adolescence (17–19 years), with purpose yes everything provide deeper insight in the developmental ones trends on motor vehicles abilities .

The identification on the differences in motor vehicles performance where the different ones adults groups there is significantly influence upon the creation on specific and individualized training programs . Furthermore , this research there is for purpose yes them inform coaches and sports teachers for the effective ones methods on development on physical and motor skills capacities where the swimmers adolescents , anyway provide practical directions for optimization on the training one process . With considering on that what swimming everything basis on combination from aerobic and anaerobic capacities , the results from this research they can yes help in improvement on selection , training and long-term development on the young people swimmers .

The scientific one contribution on this one labour lie down in the security on relevant data which will it support the practical understanding on the development on motor vehicles abilities where adolescents . Through analysis on received results , the research will open new ones opportunities for future development on interdisciplinary studies in sports science , which will her are considering the correlation between the physical development , training and sports programs performance where the young people athletes .

Materials and Methods

Four variables were used to assess motor abilities : 400m technique crawl, 200m technique crawl, Critical speed on swimming - " specific test " (CSS) and Broad jump (BJ) , news.

Broad Jump (BJ)

Instruments: three mats, one springboard (*Royther*), chalk , tape meter for measurement .

Description on the place for performance on the test : the test it was carried out in sports hall . The mattresses everything set up longitudinally , fixed . Before the mattress everything sets up the bouncer board at what hers lower part e to the edge on the mattress . The scale for measurement on broad jump it begins from the beginning on the bouncer board (*Royther*), towards the mattresses.

Task : the respondent standing with both legs (barefoot on himself edge on the bouncer board) , with the face turned around con the mattresses . The respondent jumps sunny what away in direction forward with sunny landing . Everything perform after three jumps .

Evaluation : everything register the length on the correct and the longest jump in centimeters , from the bouncer board to the imprint on the heels on the feet .

Note : the irregular ones jumps everything they repeat .

Critical speed on swimming – aerobic test (css)

Purpose : yes everything calculate the critical one speed on swimming how measure for endurance and fitness which will help at determination of the " intensity on swimming on the trainings " .

Necessary equipment : swimming pool (25 m or 50 m), stopwatch and assistant .

Pre-test : Initially everything they explain the procedures for testing on the subject . Do it screening on health risks and get informed consent . They were ready forms where what everything they wrote down the basic ones information how what everything age , height , physical weight , sex , conditions for testing .

Procedure : After correctly heating , subsequently the swimmers they swim after 2 series of 400 meters and 200 meters , each attempt with maximum pace and with respectively time for vacation in between every one swimming for yes there is completely recovery to the next one series . The swimmer it begins every one swimming with start in water (with pushing from the wall – without diving). The times for every one swimming were performed from side on assistant Time is used in seconds for every one swimming and the formula below for yes we calculate css.

Results : CSS in meters in second is calculated with help on the next one formula , where where $D1 = 200$, $D2 = 400$, $T1 =$ time for 200 m swimming in seconds and $T2 =$ time for 400 m swimming in seconds

CSS formula : $CSS (m/sec) = (D2 - D1) \div (T2 - T1)$

The professor Gin he discovered that css for one swimmer is 80-85% of the maximum speed on swimming of 200 meters and 90 – 95 % of theirs speed on swimming from 400 meters .

Use : here example for using of CSS for determination on the weather for training on the swimmer (from Ginn 1993). With using of the CSS of the swimmer (1.3 m/s in this one case), for session of 4×400 m, the target time for every 400 meters is $400 \div 1.3 = 307.7$ seconds or 5 minutes and 7.7 seconds .

Target group : this is a test for swimmers . The test is adequate for experienced swimmers (men and women), who they can yes perform two series swimming with maximum effort .

Advantages : simple test and calculation .

Validity : All showed that css is good correlated with the speed on swimming what fits on the beginning on the accumulation on lactate in the blood (OBLA) and the maximum stable condition on lactate (Wakayoshi et al., 1992a & 1993).

The measurement it was realized in standard conditions in halls and swimming pool . The measurement it realized professional persons from the area on kinesiology , which previously were empowered for measurement on a certain motor test. The space where what everything implement the measurement it was equipped with all necessary props and instruments for the proposed tests . The distance in between the tests and their sequence it was such what the previous ones measurements no can yes affect on the result on the

next one test . The temperature in the hall and the pool it was from 17 – 22°C. All respondents were in appropriate equipment and divided into groups.

Results

Table 1. Descriptive Statistics

	A subgroup	Mean	Std. Deviation
400m swim	1.0	6:04:55.00	51:36,5
	2.0	5:35:07.50	42:19,1
	3.0	5:07:40.00	39:59,2
	Total	5:35:54.17	50:09,1
200m swim	1.0	2:59:22.50	32:23,7
	2.0	2:42:25.00	27:10,0
	3.0	2:32:52.50	25:29,4
	Total	2:44:53.33	30:11,3
CSS	1.0	92,771	119.455
	2.0	86,354	83.073
	3.0	77,396	119.054
	Total	85,507	124.424
BJ_avr	1.0	1.360.583	2.054.647
	2.0	1.565.250	2.819.269
	3.0	1.856.542	3.527.565
	Total	1.594.125	3.488.983

Looking around them the results from Table no . 1 which everything relate on motor vehicles tests where the swimmers adolescents from different adults categories we notice a few interesting aspects .

For the initial ones two test , swimming at 400 m and 200 m, the average time for completion everything differentiates between the different ones adults categories . On example , swimmers from the adult group from 10 to 12 years they have longer time for completion on both distances , in comparison with the swimmers from the adults groups from 13 to 16 years and from 17 to 19 years . This can yes everything owes on the physical ones differences between groups , as well as theirs levels on readiness and training .

What everything relates to the critical one speed on swimming (CSS), the results show that the level of CSS drops with the increase on the adult group on the swimmers . This can yes be result on physiologically changes which everything are happening with the development on the body , as well as the the training who them prepares the swimmers for the competitions .

Finally , where motor vehicles tests we notice that the length on the jumps everything increases with increase on the adult group on the swimmers . This can yes be result on different degree on physical form , abilities and development on the muscles where the swimmers in the different ones adults categories .

In the whole , the results from motor vehicles tests show that the physical ones features and capabilities on the swimmers everything in considerable measure connected with theirs adult category , what can yes be important for training and development on the programs for preparation on the swimmers.

Discussion

The results from this research indicate on significant differences in motor vehicles abilities where the swimmers adolescents from different adults categories , what them supports the previous ones theoretically and empirically knowledge for the influence on age and training upon the physical development . The bigger one part from the results show that motor vehicles performance , expressed through the critical one speed on swimming (CSS) and the broad jump (BJ), all improve with age , which is expected outcome upon basis on physiological and technical improvements which occur with training and biological maturity .

And aerobic capacities and endurance

The significant improvement in the times the 200 m and 400 m swimming , as well as the critical one speed on swimming (CSS), indicates on increased aerobic endurance where the older ones categories swimmers . This is consistent with the previous ones studies which show that the aerobic capacity everything develops with the age , at what the specific ones training programs they play significant role .

The higher CSS at the older ones swimmers is a sign for more efficient use on the energy is even better adaptation on cardiorespiratory system on the competition conditions .

Strength and explosiveness

The results from BJ indicate on increase on the explosive strength on the lower ones limbs with age , what can yes everything explain with improvement on the muscular one capacity and motor skills control . This indicates that the young people swimmers , like what they grow old , they show improved synchronization on motor vehicles units and greater muscular table , which is supported from the specific ones training programs directed con development on force .

Influence on the training

The primary factor what them explains these differences , besides the biological maturity , is the continuous training and the increased intensity and specificity on training activities with the age . The older ones categories swimmers they pass through training programs which no only what her develop their aerobic ability , but also theirs technical and tactical preparation , what results with improved motor performance .

Restrictions

This research everything focused exclusively on swimmers from competitive teams , what can yes limit part from the generalization on the results . The same so , missing analysis on the individual ones factors , such as what everything the genetic ones predispositions and social influences upon the training , which the same so they can yes they play role in the results .

Recommendations for future researches

1. Spreading on the sample : Inclusion swimmers from different levels on training and sports readiness for yes everything increase generalizability .

2. Additional parameters : Analysis on others factors , such as what everything the muscular endurance , physical composition and psychological aspects on the training .

3. Long term researches : Tracking on the swimmers in longer temporally period for better understanding on theirs progress .

4. Effects from different methodologies : Comparison on the effects from different types training (aerobic , anaerobic and strength) on motor vehicles performance .

With considering on the significant ones results and recommendations , this research represents solid basis for future research and development on the methodology for training on the swimmers adolescents . The results the same so they give valuable directions for coaches , parents and athletes teachers in direction on optimizing on training and development on the young people athletes .

Conclusion

The results from this research her confirm the hypothesis that they exist statistically significant differences in motor vehicles abilities where the swimmers adolescents from different adults categories . With increase on age , was observed significantly improvement in performance on motor vehicles tests , what everything reflects on the improved one result in swimming at 200 and 400 meters , as well as in the broad jump (BJ). These differences they can yes everything attribute on the physiological and the motor development on adolescents , as well as the influence on the continuous training and the increased technical readiness .

Specifically :

- The older ones categories show better aerobic endurance , expressed through faster time on swimming and bigger critical speed on swimming (CSS). This indicates on increased efficiency in swimming and better adaptation on the body on the aerobic stress .

- The results from BJ show that with the age everything increases the explosive strength on the lower ones limbs , which is an indicator for improved muscular capacity and force endurance where the swimmers

Practical implications

These findings they have significant implications for the development on the training programs where adolescents . It is recommended to :

1. Individualization on the training : Planning on trainings which will them they take consideration the specific ones needs and the physical abilities on each one adult category .

2. Focus on endurance : Introduction progressive exercises for improvement on the aerobic capacity where the younger ones categories .

3. Development on strength : Intensification on the forces exercises in the later ones phases on adolescence , for increase on the explosive force .

Limitations and recommendations for future researches

Although this research gives valuable information , the limitation on the sample only on swimmers from competitive teams can yes affects on the generalization on the results . The future ones researches need :

- Yes turn on bigger and more diversified sample for better validity .
- Yes examine additional motor and physiological parameters , like what everything lactate threshold , the muscle endurance and physical composition .
- Yes analyze the influence on different methods on training upon motor vehicles abilities .

The appropriate one integration on these recommendations will enable promotion on training programs and achievement on optimal results where the young people swimmers .

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