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### НАУЧНА КОНФЕРЕНЦИЯ

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методики на кинезитерапия за преодоляване на нарушения мускулен баланс, за премахване на дискомфорта и осъществяване на профилактика [1].

### ЗАКЛЮЧЕНИЕ

Адекватното приложение на кинезитерапия спомага за точната диагностика на скъсяването на m. quadratus lumborum и промените в статично-силвата му издръжливост, което обуславя навременното преодоляване на промените в мускула, предотвратяване на усложненията и подобряване на изпълнението на спортистите.

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### ALTERATIONS IN M. QUADRATUS LUMBORUM IN FEMALE ATHLETES

Rumyana Tashева, Georgi Mitrev, Maria Mineva, Kiril Zahov, Hristo Marinov

THE PURPOSE OF THE STUDY is to test the shortening and static – strength endurance of m. quadratus lumborum in active trained sportswomen.

RESULTS 17 female athletes were examined. On 88.2% of them was established asymmetric shortening with 47.2% on the left side and 41% – on the right side. On 53, 36% of the shortened side the static – strength endurance was better. The average difference between both sides was 1.93 cm.

CONCLUSION. The asymmetric shortening of m. quadratus lumborum is presence in female athletes. Tracing and analyzing the soreness and pain of the muscles leads to develop the physiotherapy strategy for injuries prevention and improving the athletes' performance.

### TECHNICAL PERFORMANCE OF THE GYMNASTIC ELEMENT CIRCUIT FRONTLEG AT HORSE WITH HANDLES DEPENDING FROM THE MORFOLOGICAL AND MOTOR DIMENZIIONS

Orce Mitevski, Georgi Georgiev, Biljana Popeska

### INTRODUCTION

In sport gymnastic are performed gymnastic elements with complex structure. To be performed more movements with hands, legs and body in the same time, with different speed and intensity, in different directions, beside the rest, it is necessary the performer to have the necessary motor abilities and with proposal body constitution. The goal of this investigation is to figure the influence of isolated and definite latent dimensions in morphological and motor space of successful technical performance of the gymnastic element in circuit front leg of the horse with handles.

### METHOD OF WORK

From pattern of 148 pupils from male sex from Sport gymnasium M.M.Brico-Skopje, at age of 17 years, has been used 21 anthropometrical measures for figuring the morphological structure and 30 motor tests for estimating 9 hypothetic motor dimensions from the suggested model of Metikosh and his collaborators (1989), (coordination, realization of rhythmic movements, balance, frequency in movements, speed of the movements, precisely, flexibility, strength and explosive force). Successful technical performance of gymnastic element circuit front leg at the horse with handles, is estimated from 8 qualified examiners with standard criteria for appraisalment.

The reports are searched with basic statistic descriptive parameters. For figuring the latent structure of used anthropometric measures and motor tests, it has been done transformation of the information with coefficient of correlation and factor analyzes, and theorization of the isolated morphological and motor factors with technical performance of the gymnastic element circuit front leg is figured with regressive analyze.

### RESULTS AND DISSCUSION

From the used factor analyze in morphological area, has been isolated 4(four) latent dimensions defined as: ANTFAK1(under skin mast tissue), ANTFAK2 (longitudinal dimension) and ANT FAK4 ( volume and mass of the body). With factor analyze in motor space, has been isolated ten motor factors that are



conditionally named as factors for coordination- OBF 1, strength - OBF2, rhythmic movements- OBF 3, force-OBF4, precisely-OBF5, flexibility-OBF6, factor for making complex movements-OBF 7, frequency of movements- OBF8, balance-OBF9 and explosive force OBF10. For figuring the relations between the system of isolated morphological factors (table 1) and isolated motor factors (table 2), as predictors with achieved success in technical performance of gymnastic element circuit front leg as criteria, it is used an linear regressive analyze.

Multiple linear regressive analyze of morphological system and of latent morphological factors with latent gymnastic criteria of the horse with handles-circuit front leg. According to the results of regressive analyze used morphological system its significantly is connected with criteria. Significant partial negative correlation criteria has with factors ANTFK2 and ANTFK3 (table 1).

Table 1

*Regressive analyze between used system and isolated morphological factors with success during the technical performance at circuit front leg.*

Variables	R	Part-R	BETA	T-test	Q
ANTFAK1	-.04	-.06	-.06	-.68	.50
ANTFAK2	-.27	-.31	-.35	-3.97	.00
ANTFAK3	-.02	-.19	-.21	-2.26	.03
ANTFAK4	.12	.11	.11	1.34	.18
DELTA=.11 RO=.34 DF1=4 DF2=143 F=4.60 Q=.00					

According to the get results, successful technical performance at gymnastic element circuit front leg will be hardened in those exemplars that has bigger longitudinal measures (longer legs, arms and bigger high). During the performance in conditions of lower stability, peripheral parts of the legs and body has to pass longer route. All that hardened the performance to the exemplars that doesn't have motor abilities at necessary level. Increased values of longitudinal measures has positive influence in conditions when exemplars has the necessary motor abilities and if the technique is managed at satisfy level. In that conditions peripheral parts from the body and the legs will pass longer route, will get larger speed and gymnastic elements will be performed with larger speed and amplitude of movements.

Significant prediction of gymnastic element- circuit front leg with anthropometric factor 3 (transversal dimensionality), may be explained with the results of the investigations of correlations between anthropometrical and motor pointers in manifested and latent area. The width of the shoulders, bigger values of the elbow articulation and articulation of the hand will provide bigger stability and strength while the transfer of the weight, but wide pelvis, bigger diametric of the jump ankle

and knee will hardened the performance at gymnastic element circuit front leg, because the leg and body has to higher over the height of appliance.

Multiple linear regressive analyze of motor system and on latent motor factor with latent gymnastic criteria at appliance horse with handles- circuit front leg.

In regressive analyze (table 2), criteria variable significantly and middling is connected with the system of latent motor factors (46). Variability of criteria of the system is explained 21%. Significant and low standard partial potential coefficient (with values from .16 to .21) criteria variable has predictors: MOTFAK6, MOTFAK8, MOTFAK9 and MOTFAK 10 (flexibility, frequency of movements, balance and explosive strength).

Table 2

*Regressive analyze between isolated motor factor with success while the technical performance of circuit front leg*

Varjabli	R	Part-R	BETA	T-test	Q
MOTFAK1	.24	.11	.11	1.34	.18
MOTFAK2	.00	-.05	-.05	-.62	.54
MOTFAK3	-.00	-.05	-.04	-.54	.59
MOTFAK4	.10	.06	.06	.76	.45
MOTFAK5	-.05	.02	.02	.22	.82
MOTFAK6	-.27	-.17	-.16	-2.04	.04
MOTFAK7	.09	.06	.05	.71	.48
MOTFAK8	.22	.17	.16	2.07	.04
MOTFAK9	.24	.17	.16	2.08	.04
MOTFAK10	.29	.22	.21	2.61	.01
DELTA=.21 RO=.46 DF1=10 DF2=137 F=3.70 Q=.00					

The technique of transferring the weight of the body from one to another hand and maintaining the body in labile balance condition while the performing of the gymnastic element circuit front leg, while the other, depend from the balance as a motor ability. Except maintaining the balanced condition of the body and segments speed and explosive strength, the fast and strong waving with legs during the receding, are conditions for successful performance of circuit front leg. Significant partial influence of the criteria has show the factor for performing the gymnastic elements with larger amplitude. Amplitude of the legs moving in this investigation doesn't come to be express, because of the average success that is relatively small and in bigger number of the examinations that overload the technique at low level. Significant influence at this factor probably is result of acting the mechanism for regulating the tonus of the muscles, which provide after passing the leg thought the appliance to be done relaxing of the flexor muscles at front side of the legs and body and after passing the vertical to be activated extensor muscles of the legs



and body so on that way will be provided wave with the legs to back so the legs will be elevate at higher level.

According to Zaciorski M.V.(1975) between the balance and good physical preparing there is correlation. There connection is affirmed with results from regressive analyze at the appliance horse with handles.

The balance and explosive strength its positive influence has show in all eight gymnastic elements at appliance horse with handles in same investigation.

Significant influence at the balance and explosive weight is result of their common acting in heavier conditions.

According to the received evaluation of gymnastic element – circuit front leg we can conclude that this gymnastic element is technically overloaded at relative low level. According to received results (Smajik and Mitevski), if the structure of gymnastic element is complex, except with necessary motor abilities at satisfactory level and necessary body structure, should be separate more time and for overloading the technique of the elements, than the gymnastic element which are more simple in its structure.

### CONCLUSION

For overloading the technique of gymnastic element circuit front leg at appliance horse with handles, motor abilities explosive strength, segmental speed, so on that way will be lessen negative influence at outer forces (gravitation) and negative important influence at longitudinal and transversal dimensionality, so will be provided successful overloading and performing the technique at gymnastic element horse front leg.

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**Abstract:** For figuring the relations between morphological and motor latent dimension with technical performance at gymnastic element circuit front leg at horse with handles, it has been realized investigation at 148 pupils male at the age of 17 years. According to them has been used 21 anthropometric variable, 30 motor tests and it is estimated technical performance of the gymnastic element circuit front leg at horse with handles. According to received results for overcoming the technique at gymnastic element circuit front leg at horse with handles, motor abilities, explosive strength, segmental speed, balance and flexibility should be developed on satisfactory level to lessen negative influence of the external forces (gravitation) and negative important influence of the longitudinal and transversal dimension of the body.