International Journal of Physical Education, Sports and Health 2020; 7(2): 25-27

P-ISSN: 2394-1685
E-ISSN: 2394-1693
Impact Factor (ISRA): 5.38
IJPESH 2020; 7(2): 25-27

www.kheljournal.com
Received: 19-01-2020
Accepted: 21-02-2020

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Building classification standards and assessment scoreboard of the recovery ability of high-level athletics athletes after maximum use of strength

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Abstract
06 indicators were selected to assess the recovery ability of high-level athletics athletes after maximum use of strength using the Kostex Metamax 3B system. On that basis, we built the classification standards and scoreboard to assess the recovery ability of high-level athletics athletes after maximum use of strength 10 minutes after exercising.

Keywords: Building standards, recovery, respiratory function, high-level athletes, Pencat silat, exercise, maximum use of strength

Introduction
In sports training and in assessing the level of training as well as the recovery ability of athletes, it is necessary to have standard systems to serve as a basis for the assessment process. The training level of athletes is a multi-factor category, so to comprehensively assess the athletes' training level, it is necessary to develop standard systems, including: biological criteria, pedagogical criteria and psychological, recovery criteria.... In Vietnam'sports reality, due to the objective as well as subjective limitations, the development of standard systems to assess recovery ability. athletes in general and high-level athletes in each area of sports intensity are very limited, have not established a comprehensive system of indicators for each sport and in each intensity zone degree.
In order to enrich the training materials as well as assess the training level of athletes, as a basis for recruiting athletes, we conducted: building classification standards and scoreboard to assess the recovery ability of high-level athletics athletes after maximum use of strength 10 minutes after exercising.

Research Methods
The research process used the following methods:
- Methods of analyzing and synthesizing documents
- Interview method
- Pedagogical examination method (conducted on Kostex Metamax 3B system)
- Method of mathematical statistics

Results And Discussion
1. Select the criteria to assess the ability to recover respiratory function of high-level athletics athletes in using maximum strength 10 minutes after exercising
Using the method of analyzing and synthesizing documents, interviewing method,we selected 06 indicators to assess the ability to recover respiratory function of high-level athletics athletes after maximum use of strength 10 minutes after exercising including:
- Respiratory frequency (times / minute)
- Vital capacity (liters)
- Sudden vital capacity (%)
- Relative VO2 (ml/ph/kg)
- Relative VCO2 (ml/ph/kg)

- Respiratory quotient

The research was conducted on 20 Level-1 Pencat silat athletes and grandmasters. including 10 male athletes ages 18-20 and 10 female athletes ages 16-17.
Selected exercise represents maximum use of strength: 100m running
We conducted taking data to build standards to classify and assess the recovery ability of high level athletics athletes after maximum use of strength 10 minutes after the exercise, on the basis of recovery rate %.

2. Building classification standards and scoreboard to assess the recovery ability of high-level athletics athletes after maximum use of strength 10 minutes after exercising

The project built classification standards to assess the recovery ability of high-level athletics athletes after maximum use of strength according to the 2δ rule. Specifically, the development of classification standards to assess the recovery ability of high-level athletics athletes after maximum use of strength for the study subjects was built based on the 2δ rule;

The classification standards system has been developed very conveniently in the process of assessing the recovery ability of high-level athletes in maximizing the use of strength in each criterion, however, if used to assess comprehensively if an athlete is able to recover, there will still be limits due to the different criteria of measurement units. To overcome this problem, we set up a system of standard evaluation points according to the C scale based on the formula: C = 5 + 2Z.
We used 06 selective criteria to assess the respiratory function of the athletes before maximum use of strength. Results of developing classification standards are presented in Table 1,2;

Table 1: Classification standards to assess the ability to recover respiratory function of male high level athletics athletes (aged 18-20) (n=10) 10 minutes after maximum use of strength (unit: % recover)

No.	Criteria	Standards				
		Good	Fair	Average	Weak	Poor
1	Respiratory frequency (times/min)	≥122.50	115.80-122.49	102.40-115.79	95.70-102.39	≤95.69
2	Vital capacity (litre)	≥63.60	59.80-63.59	52.20-59.79	48.40-52.19	≤48.39
3	Sudden vital capacity (%)	≥99.30	93.10-99.29	80.70-93.9	74.50-80.69	≤74.49
4	Relative VO_2 (ml/ph/kg)	≥121.36	114.66-121.35	101.26-114.65	94.56-101.25	≤94.55
5	Relative VCO_2 (ml/ph/kg)	≥119.40	112.90-119.39	99.90-112.89	93.40-99.89	≤93.39
6	Respiratory quotient	≥119.91	113.61-119.90	101.01-113.60	94.71-101.00	≤94.70

Table 2: Classification standards to assess the ability to recover respiratory function of female high level athletics athletes (aged 16-17) (n=10) 10 minutes after maximum use of strength (unit: % recover)

No.	Criteria	Standards				
		Good	Fair	Average	Weak	Poor
1	Respiratory frequency (times/min)	≥120.05	113.35-120.04	99.95-113.34	93.25-99.94	≤93.24
2	Vital capacity (litre)	≥72.12	68.32-72.11	60.72-68.31	56.92-60.71	≤56.91
3	Sudden vital capacity (%)	≥55.40	49.20-55.39	36.80-49.19	30.60-36.79	≤30.59
4	Relative VO_2 (ml/ph/kg)	≥122.71	116.01-122.70	102.61-116.00	95.91-102.60	≤95.90
5	Relative VCO_2 (ml/ph/kg)	≥120.29	113.79-120.28	100.79-113.78	94.29-100.78	≤94.28
6	Respiratory quotient	≥102.15	95.85-102.14	83.25-95.84	76.95-83.24	≤76.94

Table 3: Scoreboard to assess the ability to recover respiratory function of male high level athletics athletes (aged 18-20) (n=10) 10 minutes after maximum use of strength (unit: % recover)

No.	Criteria	Score									
		10	9	8	7	6	5	4	3	2	1
1	Respiratory frequency (times/min)	125.85	122.50	119.15	115.80	112.45	109.10	105.75	102.40	99.05	95.70
2	Vital capacity (litre)	65.50	63.60	61.70	59.80	57.90	56.00	54.10	52.20	50.30	48.40
3	Sudden vital capacity (%)	102.40	99.30	96.20	93.10	90.00	86.90	83.80	80.70	77.60	74.50
4	Relative VO_2 (ml/ph/kg)	124.71	121.36	118.01	114.66	111.31	107.96	104.61	101.26	97.91	94.56
5	Relative VCO_2 (ml/ph/kg)	122.65	119.40	116.15	112.90	109.65	106.40	103.15	99.90	96.65	93.40
6	Respiratory quotient	123.06	119.91	116.76	113.61	110.46	107.31	104.16	101.01	97.86	94.71

Table 4: Scoreboard to assess the ability to recover respiratory function of female high level athletics athletes (aged 16-17) (n=10) 10 minutes after maximum use of strength (unit: % recover)

No.	Criteria	Score									
		10	9	8	7	6	5	4	3	2	1
1	Respiratory frequency (times/min)	123.40	120.05	116.70	113.35	110.00	106.65	103.30	99.95	96.60	93.25
2	Vital capacity (litre)	74.02	72.12	70.22	68.32	66.42	64.52	62.62	60.72	58.82	56.92
3	Sudden vital capacity (%)	58.50	55.40	52.30	49.20	46.10	43.00	39.90	36.80	33.70	30.60
4	Relative VO_2 (ml/ph/kg)	126.06	122.71	119.36	116.01	112.66	109.31	105.96	102.61	99.26	95.91
5	Relative VCO_2 (ml/ph/kg)	123.54	120.29	117.04	113.79	110.54	107.29	104.04	100.79	97.54	94.29
6	Respiratory quotient	105.30	102.15	99.00	95.85	92.70	89.55	86.40	83.25	80.10	76.95

Conclusion

A classification standards table and scoreboard to assess the recovery ability of high-level athletics athletes after maximum use of strength 10 minutes after exercising have been built based on genders.

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