Bulletin of the *Transilvania* University of Braşov • Vol. 3 (52) - 2010
Series VIII: Art • Sport

DETERMINATION OF EXPLOSIVE POWER IN THE 400 M HURDLES EVENT CADETS

C. GEVAT[1] A. LARION[1] H.l. TASKIN[2] F. ARSLAN[3]
F. HAZAR[4] P. OSMAN[5] M. KAYA[6]

Abstract: *For some disorder, such as diabetes, the only special instructional arrangements that may be necessary are in physical education. When this occurs, special education funds can be used to support these services. Regardless of the funding amount or source, every effort should be made to insure that appropriate physical education experiences are provided for students with health impairments. the need for physical activity and benefits to be derived from these services will justify the expenditure of fund and energy.*

Keywords: *Diabetes mellitus, insulin, obesity, physical exercises program.*

1. Introduction

In the last two decades of years, performance runners developed by modeling training after senior training algorithms in terms of volume and their intensity, and by perfecting the art of hurdlers pointing running speed crossing the hurdlers up close to senior levels.

Standard techniques for crossing the hurdles remains a theoretical concept in training and competition as each junior is running according to the individual level of training. The development objective of the power in general and particularly explosive power of a runner at 400mh actually means to harmonize and implement them in training program to be thinking much sense of responsibility of the coach.

Adaptation length and speed amplitude contact with the ground at the distance of 35m from 9 hurdle from hurdle 2 to 9 is due to changes in internal powers due to fatigue starts to install, but also by external powers caused by wind, quality runway influences opponent. For an athlete confirmed, even at the age of 16-17 years, explosive strength endurance is the result of aggregation power resulting from the report of duration of eccentric and concentric contraction allowing evidence of powers elastic component [1, 4, 5]. In this respect, for the legs, with jumps in depth training is designed for athlete training plan to - and develop both vertical acceleration and the horizontal and lactacid strength during the course is determined by resistance exercise of a certain vertical

[1] Ovidius University of Constanța, Faculty of Physical Education and Sport, Romania.
[2] Selcuk University, Konya, School of Physical Education and Sport, Turkey.
[3] Karamanoglu Mehmetbey University, Karaman, School of Physical Education and Sport, Turkey.
[4] Adnan Menderes University, Aydin, Turkiye.
[5] Erciyes University Physical Education and Athletics Collage,Kayseri,Türkiye.
[6] Physical Education and Sport College Of Erciyes University, Kaysery, Türkiye.

powers and / or horizontal to the ground. Therefore, much of the jumping exercises, including: triple jump without take off, five steps without take off, ten steps without take off, jumping type "countermovement jump" consist of vertical components and / or horizontal in form, complexity and diversity, developing both vertical component and horizontal component of power.

Athlete shall be an explosive power as high acceleration to overcome gravity, their own body weight while a jump to make as good [2, 3]. Based on these assumptions, in our research we want to identify the explosive power during before competition period a junior athlete in the age of 16.2 years, runner 400mh, vice national champion in 2004.

2. **Organization of research**

Research is a case study. The period is "between" April 15 to May 15, 2005, during which took place every 8 workouts per week. We illustrate the main means of training:

- Monday: 9.00: Power with 10 tones: genuflexion, walking lunge, lifting the bank (h = 40cm), torn; 17.00: 3 x 12 x jump deep (h = 50-40-30cm) 3 x 6 x 100m I = 90%, break: 1min, Break: 5min.
- Tuesday: from the place: 5 x five steps take off on the left leg., 5 x five steps take off per right leg. 1 x 500m with 14 hurdlers placed at 17.5 m distance, break: 5min, 2 x 500m with hurdles 5, 6, 7, 8, 9, 10 break: 6min., 1 x 500m.
- Wednesday: 35min. with increasing tempo in turn, power (for the development of abdominal and back muscles).
- Thursday: 5 x five steps take off, 5 x ten steps, 5 x 300m I = 90% (with hurdles 1, 2, 7, 8) break: 5min.
- Friday: idem Monday morning training. Afternoon: deep jumps idem Monday and 3 x 6 x 60m I = 95%, break 1min., break: 5min.
- Saturday: 2-bit jump. Over 10 hurdles (h = 0.91 m) to 3 feet away, 2 x 5 x 150m I = 95% break: 2min, Break: 7min.Sunday: rest.

On Tuesdays, Wednesday, Thursday, Saturday, the sportsmen have make sample Miron Georgescu, after training, after - noon, while on Mondays and Fridays to be made after training this morning (the power). Miron Georgescu clear that evidence such as energy resources highlights of a sporting driving characteristics of basic strength, speed, explosive power in a power-speed maximum effort in the triple extension. Were carried out every 15 jumps (in shoes) on two legs, right leg and then on the left, is considered the best 10 attempts in the 15 jumps, software giving us the average maximum power (W / kg), height of flight, speed drill, the coefficient of variability in energy and coefficient of variance structure. We will look only unitary anaerobic power (W / kg). The Miron Georgescu method was introduced in sports assessment in 1953. After many years of experiments, it was improved by a group of specialists (I Stupineanu, O. Ciubotaru and P. de Hillerin). Hillerin, in 1999, managed to improve it and to introduce two new assessment indicators and terms, the accomplished maximum power (PMr) and the maximum possible power (PMp).

Presentation of results:

The parameters studied in training (Monday-Wednesday) Table 1

Parameter		Monday I	Monday II	Tuesday	Wednesday
PUBL-(PUR+PUL)	Week I	-1,8-1,9	-	-1,55+1,78	-1,43 1,65
	Week II	0,01	-	-1,10	-1,15
	Week III	0,70	-	-0,49	-0,01
	Week IV	1,73 - 1,84	-	0,40 0,50	0,46 0,57
Resources		Power (t)	reps 100m	reps 500m (with hurdles)	r.t.v.
Results Running (min.-max.)	Week I	-	12,8-12,3s	1,25 – 1,23min	-
	Week II	-	12,6-12,1s	1,24- 1,22min	-
	Week III	-	12,3-12,0s	1,20 – 1,19min	-
	Week IV	-	12,1-11,6s.	1,17 – 1,15min.	-
Multi jumps results	Week I	-	Deep jumps	13,70-13,90m (right) 13,80-14,10m (left)	-
	Week II	-	Deep jumps	14,00-14,15m (right) 14,10-14,38m (left)	-
	Week III	-	Deep jumps	14,07-14,26m (right) 14,11-14,34m (left)	-
	Week IV	-	Deep jumps	14,27-14,49m (right) 14,40-14,71m (left)	-

The parameters studied in training (Thursday-Saturday) Table 2

Parameter		Thursday	Friday I	Friday II	Sunday
PUBL (PUR+PUL)	Week I	-1,60 -1,80	-1,04	-	-1,01
	Week II	-2,06 -1,89	-0,86	-	-1,61
	Week III	-2,50 -2.78	-0,79	-	1,25
	Week IV	-3,17-3,21	-0,17	-	1,47
Resources		reps. 300m (with 8 hurdles)	power (t)	reps 60m	reps 150m
Results Running (min.-max.)	Week I	44,5-43,9s	-	7,6-7,4s	18,8-18,4s
	Week II	43-41,8s	-	7,4-7,2s	18,6-17,9s
	Week III	41,6-40,8s	-	7,1-6,9s	18,2-17,6s
	Week IV	39,5-37,8s	-	7,0-6,8s	17,9-17,4s
Multi jumps results	Week I	Five steps take off jump* 14,40-14,86m	-	Deep jumps	2-foot jump over hurdles
	Week II	14,90-15,10m	-	Deep jumps	2-foot jump over hurdles
	Week III	15,00-15,10m	-	Deep jumps	2-foot jump over hurdles
	Week IV	14,90-14,98m	-	Deep jumps	2-foot jump over hurdles

* Correlation insignificant at p> 0.05 (r =- 0.243)

3. Discussions

In the two tables (no. 1 and no. 2), we presented on the stage before the competition period four weeks of the results of the main means used in training and values of the difference between power unit on both legs (PUBL) and sum of the unit on foot Left and right: PUF-(PUR + PUL) expressed in W / kg. We interpret the results according to the scale of values developed by the National Research Institute for Sport:

in terms of strength training for athletes normally prepared, the value of PUA-(PUR + PUL) is -1, lack of training pointing at to the values between -1 to 0, or positive and the excess power reaching values between -1 -, -2, and if the values of the differences are between -1.40 -, -1.50, can keep the same power, but training must be geared towards speed. If values are going to -2, have low load power and worked mostly for speed.

As noted in the two tables, sportsman shows, mostly in the first week studied values between -1.9 to -1.65 [PUA-(PUR + PUL]) which shows that the preparation of power is excessive. Analyzing the results following 3 weeks, the highest value of power is found at around -2, (-1.9) which underlines again that the athlete was training in excess of power. (Hillerin, J.P., 1997**,** 1999).

While preparing the corresponding power-excess-scale, results of all means used in that period are evolutionary, in AA 100m to reach a result of 12.8, from 11.6, achieving a growth of 9.06%. A repetition of 500m, from 1,25-1,15 min, progress to 8%, while the five steps take off one foot increase is 4.87% and the five steps take off jump(both legs) results were increased marginally by 1.1%. To repeat at the 300m, progress amounts to a value of 5.06% (from 44.5s to 37.8s.). Correlation between the results obtained in training the 100m and the distance from the five steps take off jump test is insignificant at $p > 0.05$.

For further development of the athlete O.D. is known, (56.78 s) in the first contest of the season-Cup "Constantin Craiu") believe that excessive power has been led to stagnation results on five steps take off jump place and prevented from obtaining higher results in the next period. Analysis of this period may be subject to other scientific papers.

4. Conclusions

Analysis results show that the progress recorded parameters is almost linear between 8.33 percent and is registering 10.6%. The event five steps taking off jump there was no progress, as confirmed by recordings made by MGM (Miron Georgescu Modiffied), where the power (number of tones of training was excessive). During programming before competition period power (with excess weight) there must be more discerning, because further development of the athlete during the competition depends on the load (optimal and necessary) incurred by an athlete during this period. We recommend testing athletes in terms of power on MGM, where possible, to have permanently controlled explosive power capacity required for every training athlete.

References

1. ADEYANJU, K., CREWS, T., MEADORS, K. (1993) Effects of two speeds of isokinetic tracksuit on muscular strength, power and endurance. *Journal of Sports Medicine and Physical Fitness* 23, 352-356.
2. BENNETTE, S. 1999, *Sprint Training Ideas 100 m, 200 m, 400 m*, Edited by Sports Speed Dintiman, Ward and Tellez, USA.
3. DELECLUSE, C. (1997) Influence of strength training on sprint running performance. *Sports Medicine* 24, 147-156.
4. DOWSON, M., N., NEVILL, M., E., LAKOMY, H., K., A., NEVILL, A., M., HAZELDINE, R., J. (1998) Modeling the relationship between isokinetic muscle strength and sprint running performance. *Journal of Sports Sciences*, **16**, 257-265.

5. GŰLCH, R.W. 1994, Force - velocity relations in human skeletal muscle. In: *International Journal of Sports Medicine*, **15**, S2-S10.
6. HILLERIN, J.P. (1999) Proposition of interpretation of the ground contact and flight time variability for the "MGM-15" drill, using indicators of the neuromuscular control quality for the motor interaction phases. *National Psychology Conference*, 27-29 May 1997, Bucharest.
7. HILLERIN, J.P. (1997) *About the modified Miron Georgescu drill. Republished internal use material*. Bucharest: CCPS.
8. www.donnamaria.ro