

Soccer during the age of the development: planning of the working loads as precautionary measure against the overuse injuries

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Introduction

The age of the development represent a period in the sports man's life characterized by continuous psyched, anthropometrical and physical strength changes. The functional evaluation can offer objective criteria to the planning of the work on the grounds of the real physical potentialities during the stage of development under examination. The epidemiological study of the accidents, allow to stress, in a second time, the incidence and the distribution of the pathologies, according to the working loads which have been planned and carried out in the various ages.

Methods

Sixty soccer players embracing an age between 13 and 19 years, attending national competitions, have been analyzed during two agonistics seasons(2005-06 and 2006-07) taking into consideration the following three aspects:

- ❖ Organic-muscular potentialities: evaluation of the maximum aerobic speed with Leger test; evaluation of the lower limbs power(W/Kg) with a test consisting in six subsequent pliometrical jumps, made by an horizontal Leg press endowed with Power Control, with a load being equal to the body weight. These evaluations have been carried out at the beginning of the agonistics seasons and before the second series of game had started in order to identify the working loads which were to be submitted.
- ❖ Working loads carried out with reference to the explosive power and aerobic power, as well as the special training with the ball(Tab. 1).
- ❖ Annotation of the accidents happened during the season, that is to say, of the overuse petologies deriving from a direct and indirect traumatic events occurred at the tendinous-muscular area which had not allowed to attend the following training or competition(Tab. 2)

Tab. 1 quotes the working loads carried out for any category which has been examined.

CATEGORY	PRIMAVERA			PUPILS		ADOLESCENT	
	19	18	17	16	15	14	13
EXPLOSIVE POWER							
Referring to the explosive power test(W/Kg)	11.4	11.6	10.0	9.5	9.1	9.4	8.8
Load (Kg) to develop the 9-11 W/Kg of power	85	85	70	70	55	55	55
Jump/week (n°)	70	70	60	60	50	60	45
AEROBIC POWER							
Referring: Maximum aerobical speed (km/h)	14.00	13.5	13.4	13.3	13.0	11.4	11.4
Maximum aerobical speed load(%)	110	110	110	110	110	110	110
Exercises running/week(min.)	16	16	14	14	14	12	12
SPECIAL TRAINING							
Referring to: competition duration(min.)	90	90	90	80	80	60	60
Heart frequency (% FC max)	80-95	80-95	80-95	80-95	80-95	80-95	80-95
Duration of the weekly load(% time competition)	155-165	155-165	155-160	160-180	160-180	200	200

Tab. 1

Tab. 2 quotes overuse injury incidence.

OVERUSE INJURY INCIDENCE							
CATEGORY	PRIMAVERA			PUPILS		ADOLESCENTS	
	19	18	17	16	15	14	13
FIRST SERIES OF GAME							
Hours for competition	66	66	66	47.6	47.6	27.5	27.5
Incidence during the competition (injuries/1000 h)	0.0	15.2	0.0	63.0	0.0	0.0	0.0
Hours for training	569	569	569	621	621	770	770
Incidence during the training (injuries/1000 h)	1.7	3.5	5.2	0.0	1.6	0.0	0.0

SECOND SERIES OF GAME							
Hours for competition	53.6	53.6	53.6	47.6	47.6	27.5	27.5
Incidence during the competition (injuries/1000 h)	0.0	18.6	18.6	0.0	10.5	0.0	0.0
Hours for training	637	637	637	594	594	737	737
Incidence during the training (injuries/1000 h)	0.0	4.7	4.7	1.6	11.7	2.7	1.3

Tab. 2

Discussion and conclusion

Overuse injuries occurred in the categories under examination, have put into evidence a incidence lower than the one reported in literature (Tab. 3). This aspect refers, above all, to the incidence occurred during the training in the various classes.

Author	Incidence during competition	Incidence during training
Nielsen and J Yde (16-18 years)	18.5 / 1000h	11.9 / 1000h
Astrid Junge (12-18 years)	8.5 / 1000h	6.7 / 1000h
Schmidt-Olsen (9-19 years)	19.0 / 1000h	19.0 / 1000h

Tab. 3: injuries incidence in soccer: literature data

The objective planning of the training through functional evaluations which show differences in the explosive power and in the aerobic power as well, allows to give each young footballer the most appropriate loads and may represent a valid precautionary measure against the overuse injuries.

Even the number and duration of the competitions lay the categories of young footballers open to different working loads which have to be analyzed and which it is necessary to refer to when planning the total training volumes, in order to prevent the coming of the overuse injuries.

Bibliografia

Nielsen and J Yde

Junge A

Schmidt-Olsen

