Materials of Conferences

INDICATORS OF MECHANICAL POWER OF CROSS-COUNTRY SKIERS IN CLASSIC AND SKATE SKIING

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To estimate the total outer power (Pto) of racing skiers when they go skiing is of primary importance as it enables to study principles of metabolic energy transformation into speed, therefore, to study its effectiveness.

In our research we compared Pto indicators covering energy provision for skiing over flat ground with simultaneous strideless and simultaneous one-step classic gluiding and simultaneous one- step and simultaneous two- step uphill freestyle gliding. Data from 10 racing skiers was used in the research.

Energy provision indicators of Mechanical Power of cross-country skiers in classic and skate skiing

Style	Classic Skiing		Skate Skiing	
Gliding types	simultaneous stepless (SS)	simultaneous one-step (SOS1)	simultaneous one-step (SOS2)	simultaneous two-step uphill (STU)
M ± m	413,27 ± 30,42	461,66 ± 88,22	704,04 ± 69,66	480,90 ± 123,12

In classic simultaneous stepless skiing the least number of muscles are used: arm muscles, shoulder and upper body muscles, so Pto indicators are minimal. In simultaneous one-step skiing (Classic Skiing) and simultaneous two-step uphill (Freestyle Skiing) pushing with one leg is involved too, so Pto is higher than in simultaneous stepless skiing. We explain high Pto indicators in simultaneous one-step skiing by active work of all muscle groups and by higher frequency of moves possible.

Thus, we see that indicators of mechanical power are different and depend on the number of involved muscle groups. Judging by subjective observations, we can say that the described gliding types are ranked differently in speed. First comes skate simultaneous one-step skiing, then classic simultaneous stepless skiing, then the other two. It is obvious that metabolic energy is transformed differently in each type. The following research will enable us to identify the pattern and to provide recommendations for training programmes and competitions.

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PYROMETRY TECHNIQUE OF MEASURING RADIOMETRIC TEMPERATURE

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The pyrometry technique development with use of multi-tier of thermal ratios is offered. A dependence of a relative module of methodical error from multi-tier values specifies relative decrease at general example.

Here is developed quite actual pyrometry technique of the real-valued temperature measurements.

The radiometric methods at registration of thermal radiation and temperature measurements can be applied as at comparatively middle temperatures (here less the chromium melting temperature) so at high temperatures. The technique of radiometric temperature measuring, at the purpose of diminishing the error and increasing the accuracy of noncontact measuring is develops.

The temperature unit is one of basic natural units at measurement of physical quantities [1].

The pyrometer here is comprehended as the radiometric thermometer of the spectral or thermal ratio for which computing formulas are lower stated [2-4].

Let's convert the Planck formula to the following equation for the gauged temperature [2]:

$$B = \sum\nolimits_{j = s,t}\{(B_p - B_n) + B_m + \ln[\text{æ}_{\text{æ}b}(B)/\text{æ}_{\text{æ}b}(B_m)]/[C(1/\lambda - 1/\lambda_{\text{o}})]\}g_j + A;$$

$$\sum\nolimits_{j = s,\,t}(g_j) = 1;\ \lambda_{\text{o}} = \lambda_{\text{o}}(j);$$

$$B_{\text{p}} = B_p(B);\ \ B_n = B_n(B_m);\ \ s \le t;\ s = \min\{j\};\ \ t = \max\{j\};\ \ B_m = B_m(j);\ \ \text{æ}_{\text{æ}} = \text{æ}(\lambda, B)/\text{æ}(\lambda_{\text{o}}, B),\ (1)$$

$$a(s, t) = |A|/B;\ A(s, t) = \sum\nolimits_{j = s,t}\ \{\ln[\{\text{æ}_{\text{æ}}(B)/\text{æ}_{\text{æ}}(B_m)\}/\{\text{æ}_{\text{æ}b}(B)/\text{æ}_{\text{æ}b}(B_m)\}]/[C(1/\lambda - 1/\lambda_{\text{o}})]\}g_j\ ,$$