Studies on the Implementation of National Standards for Student’s Physical Fitness and Health in the Collegiate Track Events

LI Liang
North China Electric Power University Department of Physical Education, Beijing (102206)

XI Cai-lian
North China Electric Power University Department of Physical Education, Beijing (102206)

Abstracts: In the study of the determinants of the physical fitness for the results of the track events, it is surprising to learn that the weight coefficient of the sidestep Test index is 0.4, and there are event group differences in the selected indicators among the winners in the track events. Therefore, the suggestion: The accuracy reflected from National Standards for Student’s Physical Fitness and Health can provide the scientific guidance in the event registration for the college and high-level representative teams who will participate in the track events.

Keywords: Implementation; health; Student

I. PROBLEM PROPOSED

Since the National Standards for Student’s Physical Fitness and Health (on trial) was issued by the Ministry of Education and State General Administration of Sport on July 25th, 2002, we have always given priority to the physical fitness in the teaching and academic research, published many provincial, municipal prize-winning papers during this, and successfully added the reading module of campus ID Card system to the testers in terms of the weak physical fitness test, which not only improves the test efficiency but also prevents the phenomena that someone else replaces tester to take examination through the pictures on the campus ID Card system. After then the school have continually extended the application of National Standards for Student’s Physical Fitness and Health to the application of sick leave and expel students, which enlightened the thesis author a lot. In 2009, Li Zhilong, the champion of the 400m hurdles and 400m race of our school, represented China to participate the World University Games held in Yugoslavia. While paying attention to the honor of the game, our school focuses on the laureate. On April 4th, 2007, Ministry of Education and State General Administration of Sport issued National Standards for Student’s Physical Fitness and Health after revising the trial version according to the new situation. The revision have brought great challenges to the important indicators like the excellent and passing rates in our school, since in three annual physical fitness tests nobody gets the full mark. This is obviously different from the result when the old standards are applied. However, the bleak picture should be avoided, since our school has taken taking physical fitness education seriously for many years and has the qualification of enrolling the high-level athletes. This is the reason why Li Zhilong has been contained in our present research. After the comparison, the evaluation rank of Li Zhilong’s is excellent, with a highest mark 96. This result makes people associate that National Standards for Student’s Physical Fitness and Health have the function of judging the level of the athletes. And the following research aims at extending the research goal to check the hypothesis.

II. OBJECTIVE AND METHOD

A. Objective

Take 375 male and female athletes in the 2010 NCEPU Spring Track & Field Games as the objective.

1) Method

a) Field test: To test according to the requirements of National Standards for Student’s Physical Fitness and Health, and adopt China Sports & Tongfang tester. The testing data in this thesis are within 2009-2010, and the testing time is from the Dec.12th, 2009 to Nov.13.2009.

b) Documentary method: to consult and research the
materials and books about physical fitness and the track-and-field event.

c) Mathematical statistics: to adopt the SPSS 10.0 software to make a descriptive analysis, a correlation analysis and one-way analysis of variance for 357 athletes’ competition results, height, weight, standard height and weight, vital capacity, vital capacity weight index, sidestep test index, grip strength, grip weight index and standing long jump.

d) Interview method: To investigate and interview the winners whose physical fitness result differs from his competition result so as to identify the authenticity of the interview objects.

B Result and analysis

1) Comparative analysis on track events

12 individual track events contain high-level and ordinary athletes enrolled into our school. The ordinary athletes include top 8 winners. To make a comparative analysis for the physical fitness of the three groups by combining their track event results so as to find the features of the winner’s physical fitness.

a) Comparative analysis on short-distance race

Short-distance race is a short race for short. Running, as one of the native abilities of our human beings, is a kind of competition from of old, described in the documents of almost all the countries. According to historical records, short race, with a distance of 192.27 meters, is the only athletic event in the ancient Greek Olympic Games in 776 BC. The modern short race origins from Europe, and in 1850, it is officially listed into the competitions in the sports meet of Oxford University. At that time there are races of 100 yards, 330 yards and 440 yards. At the end of 19th century, in order to standardize the event, the distance is changed from yard system to metric system. Nowadays, the Olympic Games have the male and female 100-meter races, 200-&-400-meter races, among which the male events are listed in 1806, the female 100-&-200-meter races in 1928, and 400-meter race in 1964.

According to the material, the body types of the short-distance race athletes depend on the event. The ideal height of male and female athletes is 1.78 and 1.70 or above respectively. The general figure should be: Robust body, thin and long muscles, small joints, middle pelvis, arm muscles tighten up, wide feet, high arches, long tendons, short trunk, long lower limbs, short thighs, long shanks. The sport quality: quick simple hearing reaction speed, quick starting speed, strong lower limb explosiveness, high motion frequency, long strides, and good joint flexibility, which are the basic sport qualities needed in the event.

b) Comparative analysis of middle and long distance races

Middle-distance race is a middle race for short. The earliest events are 880 yard and one mile races. From the mid-19th century, they are substituted by 800- and 1500-meter races. In the Olympic Games, there are 800-and 1500-meter races of male and female, among which the male events are listed in 1972, the female 800-meter race in 1938, and 1500-meter race in 1972. Long-distance race is long race for short. The earliest events are 3-mile and 6-mile races. From the mid-19th century, they are replaced by 5000- and 10000-meter races. In the Olympic Games, there are 5000-and 10000-meter races of male and female. The male events are listed in 1912, the female 5000-meter race in 1996, and 10000-meter race in 1988.

According to the material, the body type of the middle and long distance athletes should be: The ideal male height is around 1.8 meters, while the female is around 1.7 meters. The male weight is below 70 kgs, while the female is below 60 kgs. The general figure should be: slender and symmetrical body, sturdy but non-thick trunk, narrow pelvis, long legs, small joints, clear muscle lines, the shanks are a little longer than the thighs, clear and long tendons. The sport quality: A good endurance quality, especially the one in the anaerobic metabolism condition, is the main quality of the middle race athletes.

b) Analysis of determinants of physical fitness in the track scores

The track event result is competition result, namely, the ranking. The physical fitness determinants of the competition result are one of the key points of the research. As we all know, the physical fitness requirements depend on the track-and-field events. The eight elements of the physical fitness---Height, weight, standard height and weight, vital capacity, vital capacity weight index, sidestep test index, grip weight index, and standing long jump—are like the eight planks of a wooden cask. Which element determines the ranking? So we need to make a correlation analysis between
the elements of the physical fitness and the ranking.

As mentioned in Table 6 and 7, the ranking is highly related with 1500-meter, 3000-meter, 5000-meter races, that is, the sidestep test index decides the ranking. According to the event-group theory, we can classify 1500-meter, 3000-meter, and 5000-meter races as the endurance event-group. Sidestep test index is an important index of reflecting the situation of cardiovascular system. The larger the sidestep test index, the higher the cardiovascular system function level, and vice versa. According to the index weight in “Students’ Physical Fitness Standards” (university students’ version), the weight coefficient of standing long jump is 0.30, and both the stair text index and grip weight index are 0.20. Both vital capacity weight index and standard weight for height are 0.15. In theory, 100-meter and 200-meter races are closed related with the qualities of the standing long jump, it is inferred that it is caused by the change of the weight. After consulting the books and documentaries, we know that the new version of National Standards for Student’s Physical Fitness and Health have changed some evaluation indexes and scores. Standard weight for height is 10 points, vital capacity weight index is 20 points, sidestep test index is 30 points, grip weight index is 20 points and standing long jump is 20 points. From the comparison between the old and new versions, we can discover that the index weight has changed many places. And the biggest change is that the largest weight index has changed from standing long jump to sidestep test index, that is, the focus of the physical fitness has changed from the body quality to body function.

The 30 point score of the sidestep test index equals to that of the standing long jump of the old version. According to the old experiences, the weight index is insufficient to be highly related to the competition result. The author of the thesis, by chance, obtained the test records of five students from the background database of National Standards for Student’s Physical Fitness and Health, and formed the following five multiple equations: 100a + 87b + 90c + 100d + 78e = 90, among which a, b, c, d, e represent respectively standard weight for height, vital capacity weight index, sidestep test index, grip weight index and standing long jump weight coefficient. The calculation at last is that a, b, c, d is 0.1, 0.2, 0.4, 0.1, 0.2. It is surprising to find that the weight coefficient of the sidestep test index is 0.4, which is 0.1 larger than that 0.3 in the documentary. This result can explain that “the sidestep test index is the main factor of deciding the competition result or the ranking.

c) Analysis of event-group theory for the track events

According to the event-group theory, 100-meter, 200-meter, and 400-meter races can be classified as the speed event group, while 800-meter, 1500-meter, 3000-meter and 5000-meter classified as endurance event group. Table 8 tells us that there are significant differences in the physical fitness evaluation index between these two event groups. The further comparison still reveals that there are gender differences between them, that is, the difference in the single index only reflects on the male side or the female side. What’s more, there is no difference in both the vital capacity weight index and sidestep test index between the male and female events.

According to the index nature, height, weight, standard height and weight, vital capacity, vital capacity weight index, Sidestep test index, grip weight index and standing long jump index can be classified. The body form index includes height, weight and standard height and weight; the body function includes vital capacity, vital capacity weight index and sidestep test index; the body quality index includes grip weight index and standing long jump. The male has event-group differences in these three indexes. The female has differences merely in the standard height and weight of the body form index. The reason, as we infer, is that our school is the key university of science and engineering where the female ratio is too small, which leads all the female body index differences are not as obvious as those of the male, but the body form is an exception. The female who participate in the endurance event group have to be slender. So the departments can screen the athletes based on those indexes, without the necessary of using other equipments.

The only puzzlement is that there are no differences in both the vital capacity weight index and sidestep Test index of the body function index between the male and female. The solution of the puzzlement needs tracking studies in the future several years.

III CONCLUSIONS AND SUGGESTIONS

A Conclusions
1) National Standards for Student’s Physical Fitness and Health have the function of judging the sport level of the high-level athletes in the same track event.
2) There are significant differences in the physical fitness between the top eight winners and non-winners in the same track event.
3) National Standards for Student’s Physical Fitness and Health can effectively screen out the athletes who have to be temporarily substituted in the competition because of reasons like improper sign up.
4) In the research of the physical fitness determinants for the track event result, it is surprising to learn that the weight coefficient of the sidestep test index is 0.4.
5) There are significant event-group differences in a part of the physical fitness indexes among the winners in the track event.

B Suggestions

The accuracy reflected from National Standards for Student’s Physical Fitness and Health can provide the scientific guidance in the event registration for the college and high-level representative teams who will participate in the track events.

REFERENCES