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# The Aesthetic Thought of Competitive Sports and the Value Study of Aesthetic Education in Health Education

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**ABSTRACT**
The health and beauty of sports, the body and spirit, the perfect and unified cultural tradition has been an important source of the combination of beauty and beauty. Philosopher Plato first to claim the combination of aesthetic education and sports, that "the movement of the body and the movement of sound has a common rhythm. Therefore, beautification of mind and physical fitness are internal consistent". The harmonious development of the body and heart pursued by modern school sports is the highest embodiment of sports aesthetic education. The implementation of aesthetic education in college physical education is an important content to promote the individual development of college students and comprehensively implement the quality education training and innovation talents. Competitive sports can be divided into physical fitness and skills, is particularly pay attention to physical exercise, physical exercise and movement skills, personal competition, competitive or groups, which contains aesthetic thought and aesthetic value are very obvious, and about aesthetic education is often used with the athletic sports education. This paper focuses on the study of two kinds of sports with high aesthetic value. The results of the study showed that: from the physical quality, the cooperative spirit, the aesthetic ability and the innovation ability, the four sides faced the analysis of the aerobics, the aesthetic value weighted 45.3%, and the sports value was 39.0%. It shows that the value of aesthetic education plays a significant role in sports such as aerobics and exercise.

**Keywords:** aesthetic education value, aesthetic education, health education

## INTRODUCTION

At the beginning of the human society, the physical strength of a person directly determines his ability to survive. In civilized society, the happiness of human beings is always associated with the health of the human body (Zheng, 2015; Hu & Su et al., 2017). The most direct and obvious function of education sports is firstly embodied in the shaping of human body, which is not blind but guided by the law of beauty. The role of sports in the human body is shown in two aspects: first, the various potential physiological functions that promote human form are fully displayed, making the human body healthy and strong (Liu & Wang, 2005). The second is to make the human body become healthier, and eventually make the human body become an organic combination of "health, strength and beauty" (Li, 2006; Liu, 2017). The profound change of aesthetic culture calls for the contemporary development of


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**State of the literature**

- The research on the aesthetic thought of competitive sports is a historical topic, and it is rare to combine with education.
- Health education is a hot topic in the world, and the research of combining competitive sports with health education is not in-depth.
- The aesthetic thoughts of competitive sports combine with health education to fill in the gap of research in this field.

**Contribution of this paper to the literature**

- Physical fitness and beauty, body and spirit, and a perfect and unified cultural tradition have been an important source of education health.
- The implementation of aesthetic education in physical education in colleges and universities is an important content to promote the all-round healthy personality development of college students and comprehensively implement the quality education training and innovation talents.
- In the study of aesthetic value weight of aerobics and la-la-cao, the value of aesthetic education accounted for 45.3%, while the value of sports was 39.0%. For the exercise of calisthenics, there is a large proportion of aesthetic education.

education. Since the 1990s, China's aesthetic cultural studies began to "from philosophy, speculative, and in the fine art of the ivory tower, to the culture, sensibility, and the attention of the public's daily aesthetic activities" (Xue, 2013; Imam & Tasadduq et al., 2017). This development trend indicates the great influence of aesthetic culture on people's life. In the past, sports were often regarded as physical sports, and the beauty of sports was confined to sports, and it was rarely associated with culture. Originally, sport is the system of culture, it is the active reflection of cultural development (Ma & Gong, 2012). Human beings love sports for the beauty of sport because they see it as a way of showing their essential strength.

Competitive sports can be divided into physical and technical skills, especially skill sports, with a higher aesthetic flavour (Wang & Cheng, 2007). The importance of aesthetic education is reflected in the oil and gas in competitive sports, such as aerobics and aerobics. It is an aerobic exercise that combines music and dance, which can improve the physical and moral qualities of the participants, especially the aesthetic and values of a person. From 2000 to 2005, the Chinese aerobics movement was developed rapidly with the help of China aerobics association (Tang et al., 2013). Thanks to the popularity of teenagers and college students, in 2001, China held the first high school action challenge competition, which has more than 20 teams. At the same time, there are some colleges and universities that have opened exercises courses such as Beijing sports university, Shanghai Sports University and so on (Wang, 2007). Aerobics has a long history, the current career in aerobics, our country attaches great importance to the aerobics movement arrangement and innovation, and focus on cultivating athletes team ability, innovation ability, aesthetic ability. And combined with the fashion factors such as music, the combination of sports and fashion.

## MODEL ESTABLISHMENTS

### Aesthetic Analysis of Technical Sports

Firstly, the paper carries out research on cheerleading and aerobics such kinds of sports aesthetic level and physical exercises contained factors, as **Table 1** shows.

**Table 1.** Influence factors

| **Aesthetic level $U_1$** | **Physical training $U_2$** |
|---|---|
| Motion aesthetics $u_{11}$ | Endurance $u_{21}$ |
| Music aesthetics $u_{12}$ | Speed $u_{22}$ |
| Formation design $u_{13}$ | Strength $u_{23}$ |
| Team uniform design $u_{14}$ | Flexibility $u_{24}$ |
| Members training $u_{15}$ | |

**Table 2.** Two principal research factors importance degrees ranking statistics

| **Classification** | **Rank 1** | **Rank 2** | **Rank 3** | **Rank 4** |
|---|---|---|---|---|
| Aesthetic level $U_1$ | 23 | 7 | 4 | 0 |
| Physical training $U_2$ | 0 | 9 | 13 | 12 |

It gets factor set:

$U_1 = \{u_{11}, u_{12}, u_{13}, u_{14}\}$; $U_2 = \{u_{21}, u_{22}, u_{23}, u_{24}\}$

By **Table 2**, it gets evaluation grade set:

$U_1 = \{23, 7, 4, 0\}$; $U_2 = \{7, 18, 8, 0\}$

Therefore, aesthetic level in aerobics and cheerleading such event, aesthetic value is relative recognized.

## Fuzzy Evaluation Model Establishment

This paper adopts fuzzy comprehensive evaluation, it considers multiple factors on that condition, to realize objective layer, and it establishes factor set, and judgment set (Zhang et al., 2016). The paper researches mainly from Aesthetic level and Physical training two main aspects, constructs evaluation indicator system. Set performance measuring indicator system evaluation set U and selection ranking domain V.

Apply the method, establish evaluation set: $U = \{U_1, U_2\}$

$U_1 = \{U_{11}, U_{12}, U_{13}, U_{14}, U_{15}, U_{16}\}$; $U_2 = \{U_{21}, U_{22}\}$

According to general evaluation system, define selection ranking domain:

$V = \{V_1, V_2, V_3, V_4, V_5\} = \{excellent, good, medium, qualified, bad\}$

## Construct Hierarchical Structure

The paper bases on analytic hierarchy process, it makes quantization on aerobics. Establish target layer, criterion layer and scheme layer relations.

Target layer: Technical sports. Criterion layer: scheme influence factors, $c_1$ is physical exercise, $c_2$ is spirit of cooperation, $c_3$ is aesthetic ability, $c_4$ is innovation capacity.

Scheme layer: $A_1$ is aesthetic education value, $A_2$ is physical value, $A_3$ is entertainment value, it gets hierarchical structure.

## Construct Judgment (Paired Comparison) Matrix

The paper takes **Table 3** showed 1~9 scale table as evidence, carry out weight analysis.

**Table 3.** 1~9 scale table

| Scale $a_{ij}$ | Definition |
|---|---|
| 1 | factor i and factor j have equal importance |
| 3 | factor i is slightly more important than factor j |
| 5 | factor i is relative more important than factor j |
| 7 | factor i is extremely more important than factor j |
| 9 | factor i is absolute more important than factor j |
| 2, 4, 6, 8 | Indicates middle state corresponding scale value of above judgments |
| Reciprocal | If factor i and factor j are relative weak, obtained judgment is reciprocal |

**Table 4.** Comparison matrix G

| G | $c_1$ | $c_2$ | $c_3$ | $c_4$ |
|---|---|---|---|---|
| $c_1$ | 1 | 1/3 | 3 | 3 |
| $c_2$ | 31/8 | 1 | 5 | 5 |
| $c_3$ | 1/3 | 1/5 | 1 | 1 |
| $c_4$ | 1/3 | 1/5 | 1 | 1 |

**Table 5.** Comparison matrix $c_1$-$c_2$

| $c_1$ | $A_1$ | $A_2$ | $A_3$ | $c_2$ | $A_1$ | $A_2$ | $A_3$ |
|---|---|---|---|---|---|---|---|
| $A_1$ | 1 | 1 | 1/3 | $A_1$ | 1 | 5 | 5 |
| $A_2$ | 1 | 1 | 1/3 | $A_2$ | 1/5 | 1 | 5 |
| $A_3$ | 3 | 3 | 1 | $A_3$ | 1/5 | 1/5 | 1 |

**Table 6.** Comparison matrix $c_3$-$c_4$

| $c_3$ | $A_1$ | $A_2$ | $A_3$ | $c_4$ | $A_1$ | $A_2$ | $A_3$ |
|---|---|---|---|---|---|---|---|
| $A_1$ | 1 | 5 | 8 | $A_1$ | 1 | 5 | 8 |
| $A_2$ | 1/5 | 1 | 5 | $A_2$ | 1/5 | 1 | 5 |
| $A_3$ | 1/8 | 1/5 | 1 | $A_3$ | 1/8 | 1/5 | 1 |

At first, solve judgment matrix, according to above principle, reference 1~9 scale setting, and according to expert's experiences and refer to lots of documents, it gets paired comparison matrix that are respective as **Table 4-6**.

## Hierarchical Single Arrangement and Its Consistency Test

Use consistency indicator to test:

Set in comparison matrix, $\lambda_{max}$ is maximum feature value, n is comparison matrix order:

$$CI = \frac{\lambda_{max} - n}{n - 1}$$

$CI$ Value gets smaller; it indicates that judgment matrix gets closer to completely consistent. $CI$ Gets bigger, then it shows that known degree is lower.

## Consistency Test

Hierarchical single arrangement and its consistency test. Use consistency indicator to test: $CI = \frac{\lambda_{max}-n}{n-1}$. Among them, $\lambda_{max}$ is comparison matrix maximum feature value; n is order of comparison matrix. $CI$ Value gets smaller, and then judgment matrix gets closer to complete consistency. On the contrary, judgment matrix deflected complete consistency degree will get bigger.

For judgment matrix $A$, $\lambda_{max}^{(0)} = 4.073, RI = 0.9$

**Table 7.** RI value

| n | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RI | 0 | 0 | 0.58 | 0.90 | 1.12 | 1.24 | 1.32 | 1.41 | 1.45 | 1.49 | 1.51 |

$$CI = \frac{4.073 - 4}{4 - 1} = 0.24$$

$$CR = \frac{CI}{RI} = \frac{0.024}{0.90} = 0.027 < 0.1$$

It shows $A$ inconsistency extent is within permissible range, now it can use $A$ feature vector to replace weight vector.

## Fuzzy Consistency Judgment Matrix Construction

Carry out binary comparison with indicator $C_i$ and$C_j$, as following shows:

If $C_i < C_j$, it takes $r_{ij} = 1, r_{ji} = 0$;

If $C_i > C_j$, it takes $r_{ij} = 0, r_{ji} = 1$;

If $C_i = C_j$, it takes $r_{ij} = r_{ji} = 0.5$.

(1) Firstly, for criterion $B_1$, it provides its included 8 indicators to important binary comparison qualitative permutation matrix as:

$$R = \begin{bmatrix} 0.5 & 0 & 0.5 & 1 & 1 & 1 \\ 1 & 0.5 & 1 & 1 & 1 & 1 \\ 0.5 & 0 & 0.5 & 1 & 1 & 1 \\ 0 & 0 & 0 & 0.5 & 0.5 & 1 \\ 0 & 0 & 0 & 0.5 & 0.5 & 1 \\ 0 & 0 & 0 & 0 & 0 & 0.5 \end{bmatrix}$$

According to the matrix, it solves each indicator weight:

$$R_1 = \begin{bmatrix} 0.5 & 0 & 0.5 & 1 & 1 & 1 \\ 1 & 0.5 & 1 & 1 & 1 & 1 \\ 0.5 & 0 & 0.5 & 1 & 1 & 1 \\ 0 & 0 & 0 & 0.5 & 0.5 & 1 \\ 0 & 0 & 0 & 0.5 & 0.5 & 1 \\ 0 & 0 & 0 & 0 & 0 & 0.5 \end{bmatrix}$$

Combine with relative membership relation, the paper gets relative membership vector: $\omega_{10} =$ (0.7 1 0.7 0.36 0.36 0.09)

After normalization: $\omega_1 =$ (0.22 0.31 0.22 0.11 0.11 0.03)

(2) For criterion $B_2$: $R_2 = \begin{bmatrix} 0.5 & 1 \\ 0 & 0.5 \end{bmatrix}$ $\omega_{20} =$ (1 0.33)

After normalization: $\omega_2 =$ (0.75 0.25)

(3) Relative to objective layer A, for criterion layer B, it provides binary comparison ordered consistency judgment matrix: $R = \begin{bmatrix} 0.5 & 1 \\ 0 & 0.5 \end{bmatrix}$ $\omega =$ (1 0.33)

After normalization: $\omega =$ (0.75 0.25)

(4) Synthesize (1)—(3) calculation indicator to target layer weight $q_{ij}$

$q_{ij} = w_i * w_{ij} (when\ i = 1; j = 1, 2, 3, 4, 5, 6; when\ i = 2, j = 1, 2)$

### Calculate Weight Comprehensive Ordering Vector

At first, calculate all experts provided judgment matrix weight vectors. According to multiple experts provided judgment matrix $Ak = (\alpha k_{ij})_{nxn}$, According to above steps, establish weight vector $wk = \{w_{k1}, w_{k2}, w_{k3}, \dots, w_{kn}\}(k = 1, 2, \dots, x)$

Here, $k$ represents one expert from them, $x$ represents total number of experts, $j$ represents one target layer one indicator, $n$ is total number of one target layer indicators.

Again, calculate weight vector geometrical mean, according to formula $W'j = \sqrt{W_{f1} \times W_{f2} \times k \times W_{fs}}$

Among them, $W'j$ is $x$ pieces of experts to some target layer some indicator empowered weight value geometric mean. Make normalization handling, according to formula: $w_j = \frac{w'f}{\sum_{j=1}^{n} w'f}$

Among them, $W'j$ is some target layer j indicator weight value after normalization handling with geometric mean? Therefore, it gets weights that is composed of $W'j$, it gets hierarchical total arrangement table. Calculation result is as following:

$$\omega^{(1)} = \left(\omega_1^{(1)}, \omega_2^{(1)}, \omega_3^{(1)}, \omega_3^{(1)}\right) = \begin{Bmatrix} 0.624 & 0.185 & 0.252 & 0.575 \\ 0.234 & 0.240 & 0.089 & 0.286 \\ 0.136 & 0.575 & 0.66 & 0.139 \end{Bmatrix}$$

It gets weight structure:

$$w = w^{(1)} w^{(0)} = \begin{Bmatrix} 0.252 & 0.575 & 0.624 & 0.185 \\ 0.089 & 0.286 & 0.234 & 0.240 \\ 0.66 & 0.139 & 0.136 & 0.575 \end{Bmatrix} \begin{Bmatrix} 0.567 \\ 0.056 \\ 0.104 \\ 0.273 \end{Bmatrix} = \begin{Bmatrix} 0.453 \\ 0.390 \\ 0.157 \end{Bmatrix}$$

## CONCLUSION

For cheerleading and aerobics such sports events research, muscle selection in performance and dance compilation perfect fused event, it mainly tests sportsman aesthetic ability, and therefore the paper makes research according to aesthetic ability. The paper analyzes aerobics and cheerleading aesthetic education values from fitness, spirit of cooperation, aesthetic ability and innovation capacity four aspects, and gets aesthetic education value weight is 45.3%, and physical education value is 39.0%. It indicates that aesthetic education value occupies very large proportions for aerobics.

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