

# Study on the Training of Difficult Handstand Movements in the Athletic Cheerleading Category

Yi Wang<sup>1</sup> and Yanming Diao<sup>2</sup>

<sup>1</sup>Beijing Sport University Competitive Sports Institute, Beijing, China

<sup>2</sup>Beijing Sport University Academy of arts, Beijing, China

## Abstract

Athletic cheerleading sets are mainly composed of slogans, lifts, basket tosses, tumbles, pyramids and jumps, among which lift are the most basic and important, the difficult movements of lift can be divided into the upper stage, the aerial stage and the lower stage; the difficult movements of the aerial stage, the difficulty of the pointer athletes standing with both legs or one leg on the hands of the base athletes can be completed by the majority of athletes. However, the difficult movement of hand support is practiced by relatively few athletes in China, while more foreign athletes practice it. This paper will use literature, questionnaires and mathematical statistics to study and analysis the training methods for the inversion of difficult movements in the category of lifting, and compile a set of suitable training programs to improve the stability of our athletes' practice of inverted difficult movements.

## Keywords

Athletic cheerleading; Lift; Handstand; Training method.

## 1. INTRODUCTION

Like gymnastics, acrobatics and trampoline, athletic cheerleading is a skill-led performance group where difficulty is the key to success. The difficulty of the lift is essential and most important in cheerleading, whether in large groups, small groups or pairs, as seen in both domestic and international cheerleading events. The handstands are more frequently seen in foreign competitions and less frequently used in China. The handstands require the top athletes and base athletes to work together and therefore require a certain amount of strength and constant bonding between the pointer and base athletes. In the process of practicing inversions, coaches can adjust their training methods or methods according to the different training periods and training conditions of the athletes, so as to improve the quality and effectiveness of training. It is hoped that through the investigation and analysis, we can conquer the difficult movements of handstand and promote the development of difficult movements of skill cheerleading in China.

## 2. INTRODUCTION

### 2.1. A study of Handstand Movement Training for Top Athletes

#### 2.1.1 Technical characteristics of handstand difficulty lifting movements of the top athletes

When practicing lifts the class difficulty handstand, the athletes can be ground first practice to improve the stability of the movement. Through research and statistics, it has been found that to practice lifts the class difficulty handstand, top athletes can practice wall handstands, climbing handstands and empty handstands on the floor to gradually find the center of gravity in their hands. The lift handstands are different from the empty handstands on the floor: The

lift handstands require the toppers to hold their hands shoulder-width apart, with the palms of their hands firmly attached to the base athlete's palms, shoulders locked in to place the weight on the base athlete's hands, waist and abdomen tucked in, hips clamped, and the whole person like a stick. When doing the handstands the top athletes should keep the body tense from the beginning of the difficulty to the end of the difficulty. In competitions, some athletes make mistakes because of the upside down phase, too much or too little control of the power and some relaxation of the body, which directly leads to the whole movement can not be completed. Therefore, the top athletes need to keep their body tense and find the right strength to do a handstand during normal practice.

#### 2.1.2 A study on the easy to make mistakes by top athletes in handstand with lifting

There will be some wrong moves in the practice of lift difficulty handstand. If they are not corrected in time at the beginning, the quality of completion of the action will be affected after the action is set. Through a survey of top athletes at two universities, The results are shown in Table 1.

**Table 1.** Study on top athletes prone to make mistakes in handstand(N=28)

Serial number	Wrong move	Proportion(%)	Number of people
1	Handstands do not place gravity on the hands of the base athletes	78%	21
2	Not actively standing up when landing	75%	19
3	Body bent at hips/arch the back in the air	67%	14
4	Excessive hip bend during handstands push	52%	9

It can be seen from Table 1, The most common phenomenon is that the top athletes in the air do not put gravity on the hands of the base athletes, about 78% of the total, then it is very likely to appear in the handstand push stage, the top athletes can not use the power of the base athletes and lead to mistakes; When landing, the phenomenon of top athletes do not take the initiative to stand up, accounting for about 75% of the proportion, This will result in the body not being fully upright when pushing up the handstand; In aerial top athletes presenting with body bent at hips/arch the backs about 67% of the time. For this kind of error phenomenon, you can practice more flat handstands, and coaches should pay more attention to the quality of the athletes' handstands; The last is the phenomenon that the top athletes excessively body bent at hips when they choose the inverted push-up action, which accounts for about 52% of the total. Then in normal training, you can practice the handstand push up action on the flat ground to avoid the disconnection of the upper body and the lower body. Therefore, the coach's guidance and demonstration is very important when practicing this difficult action at the beginning. When a wrong action occurs, the coach should also find out countermeasures and make corrections in time.

#### 2.1.3 Top athletes' fitness exercises

By investigating the physical fitness of top athletes in two universities, in order to improve the stability of inverted difficulty movements, 79% of top athletes believe that core strength exercises are essential, and limb strength exercises play a supporting role. In quality training, you can choose to practice a single action, or you can choose to practice in a combined form. Reasonable and effective quality training can also improve the completion quality of difficult

actions. After investigating the quality training content of top athletes in two universities, the results are shown in Table 2.

**Table 2.** Questionnaire on the quality training content of top athletes(N=28)

Serial number	Quality training content	Proportion(%)
1	With the wooden help of exercises abdominal muscles	67%
2	Abs rise from both ends	65.3%
3	Abdominal wheel compound waist and abdomen training	53.9%
5	Swing the ball left and right with both feet	46.7%
6	Lateral psoas exercises	37.1%
7	Kneeling Swiss Ball	25.4%

It can be seen from Table 2 that there are more exercises that choose the wooden help of exercises abdominal muscles and abs rise from both ends, accounting for about 67% and 65.3% respectively; The second is to choose the abdomen wheel compound waist and abdomen training, accounting for about 53.9%; There are relatively few people who choose to swing with their feet on the ball, Lateral psoas exercises, and kneeling Swiss balls. It can also be seen that the quality training methods are diverse. When freehand exercises can no longer meet the athletes' abilities, equipment can be used to practice, but the intensity of exercises should be adjusted according to the athletes' abilities.

## 2.2. Research on Handstand Movement Training of Base Athletes

### 2.2.1 Technical features of difficulty handstand movements of base athletes

Base athletes are indispensable in practicing the entire lifting difficulty. From the upside down movement, the aerial stage and even the lowering stage, the base athletes need to adjust to the difficult movements made by the top athletes, and to ensure that the top athletes can Successfully complete difficult moves. The technical points of the base athletes when practicing handstand movements: legs open back and forth, knees slightly bent, core tension, elbow joints of both hands are kept at a certain height, and the wrists of both hands are pressed down slightly, and the five fingers hold the wrists of top athletes. When pushing upside down into a standing posture, the elbow joint of the base athlete bends and cushions, and the top athlete is pushed up by force, and the base athlete spreads his hands upwards to meet. Base athletes need to have a certain amount of absolute strength when practicing inverted difficult movements, so that top athletes can reduce shaking when doing upside down. Therefore, for the base athletes, the difficult handstand movements of lifting type do not have high technical requirements, but the base athletes need to have certain physical fitness.

### 2.2.2 The physical fitness exercises of base athletes about lifting handstand movements

According to a survey of two colleges and universities, 49.3% of athletes believe that base athletes need to practice more upper body strength, and 38.7% of athletes believe that the exercise of leg strength of base athletes is indispensable. Therefore, base athletes should focus on strengthening the strength of the limbs, and core strength should be auxiliary exercises.

#### 2.2.2.1 Base athlete's upper limb strength training

When completing difficult inverted movements of lifting, it is necessary for the athletes on the base to have good upper limb strength. Through a survey of cheerleaders in two colleges

and universities, they competed for the upper limb strength exercises to improve the difficulty of handstand movements. The survey results see Table 3.

**Table 3.** Questionnaire on the content of upper limb strength exercises of base athletes (N=28)

Serial number	Quality training content	Proportion (%)
1	Supine control top athletes	79.5%
2	Standing posture control top athletes	79.5%
3	Standing posture push top athletes	77.1%
4	Supine bench press top athletes	70.3%
5	Bench press barbell	60.7%
6	Standing press barbell	56.3%
7	Controlled handstand	43.4%
8	Toss a solid ball up to catch it back	26.9%

From Table 3, There are 4 types of cooperative exercises between top athletes and base athletes namely, supine control of top athletes, standing position control of top athletes, standing posture control top athletes, and supine bench press for top athletes; There are also 4 types of upper body strength exercises for base athletes alone, which are bench press barbell, standing press barbell, controlled handstand, and toss a solid ball up to catch it back exercises. The proportion of upper limb strength exercises that choose person-to-person coordination is more. This can also show that the cooperative exercises between top athletes and base athletes can more effectively enhance the tacit understanding between athletes, and it can be more stable when practicing lifting difficulty. Therefore, usually more coordinated strength exercises between top athletes and base athletes should be added. It can also be seen from Table 3 that there are 5 types of dynamic exercises, namely, Standing posture control top athletes, supine press top athletes, bench press barbell, standing press barbell, and toss a solid ball up to catch it back exercises; there are 3 types of static exercises, Are the exercises of supine control of the top athletes, standing posture control of the top athletes, and controlled handstand. Many athletes ignore static exercises during training, and pay more attention to dynamic exercises. They think that the more they do, the better. In fact, the standing or supine control will increase static strength faster, just like the standing control. It is also closer to actual combat. Therefore, dynamic and static should be combined in daily exercises.

#### 2.2.2.2 Base athlete's lower limb strength training

For lift movements, base athletes need not only the strength of the upper limbs, but also the coordination of the strength of the lower limbs. Therefore, the exercise of the strength of the lower limbs is also very important. Through the investigation of cheerleading athletes in two universities, the content of the exercises of lower limb strength, the results of the investigation (see Table 4).

**Table 4.** Questionnaire on the content of lower limb strength exercises of base athletes (N=28)

Serial number	Quality training content	Proportion (%)
1	Weight-bearing squat	71.7%
2	leapfrog	66.3%
3	Jumping mat	61.4%
5	static squats	54.4%
6	High leg up	37.1%
7	Mountain run	32.6%

It can be seen from Table 4 that the proportion of athletes who choose weight-bearing squats is the largest, accounting for about 71.7%; followed by athletes who choose leapfrogs, accounting for about 66.3%; athletes who choose jumping mats and static squats are also not a minority, accounting for about 61.4% and 54.4%. Base athletes can make corresponding adjustments according to their own ability level when practicing leg strength, so that the leg strength can be improved.

### 2.3. Cooperative Exercises Exercises for Top Athletes and Base Athletes to Lift Difficult Handstand Movements

Due to the difficulty of lift difficult handstand movements, before the base athletes and top athletes cooperate, a series of auxiliary exercises will be carried out to increase the athletes' awareness of the difficult movements, so as to improve the success of the exercises. Rate, reduce the occurrence of accidents.

#### 2.3.1 A Study on the Training Means of the Coordination Between the Top and the Base athletes

Before practicing the handstand difficulty movements of the lift type, athletes can pass a series of cooperative exercises to increase the tacit understanding between the top athletes and the base athletes. Investigate the cheerleading athletes of Beijing Sport University and Guangzhou Sport University, and the results of the survey see Table 5.

**Table 5.** Investigation of training methods (N=28)

Serial number	Cooperate with training	Proportion (%)
1	Base athletes standing handstand exercises	71.7%
2	High-position push-up exercises	68.5%
3	Supine base athletes handstand exercises	64.4%
4	handstand push-up exercises	52.1%
5	In-situ elevator exercise	49.3%

It can be seen from Table 5 that in the air stage, the base athletes standing handstand exercises practice is more, accounting for 71.7% of the proportion. The base athletes standing handstand exercises practice is closer to actual combat, and can be protected by coaches and athletes, top athletes and base athletes Adjust the gripping method and the body's center of gravity. In the upside down stage, there are more exercises to choose the High-position push-up exercises, accounting for 68.5% of the proportion, which can make the top athletes feel the feeling of falling hands, and the base athletes can experience the feeling of takeover buffer.

### 2.3.2 Air phase cooperate with training

Cooperative exercises in the aerial stage can through by Supine handstand exercises and standing handstand exercises, so that the top athletes can find feelings, and can also keep the top athletes tense see Figure 1.



handstand side

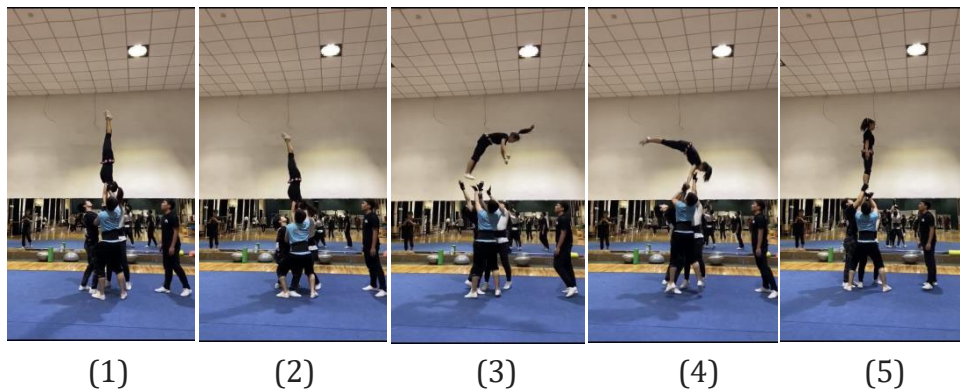


handstand front

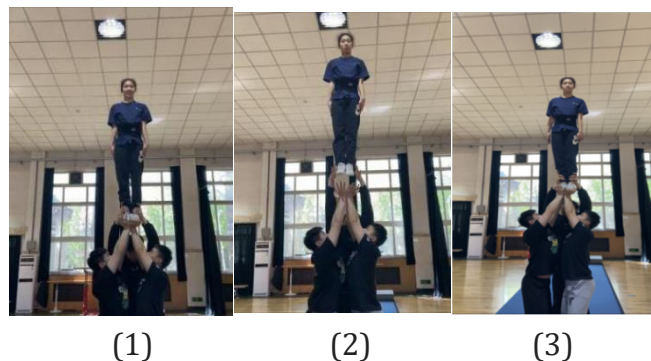
**Figure 1.** Base athletes standing handstand exercises

### 2.2.3 Handstand push-up exercises

The handstand push-up stage can be practiced by handstand push-up pins and high-position push-up pins see Figures 2 and 3.



**Figure 2.** Push up the pin upside down



**Figures 3.** High-position push-up exercises

Through a series of cooperative exercises, the tacit understanding and trust between the athletes can be increased, and the stability of the difficult handstand lift movements can be gradually improved.

### 3. CONCLUSIONS AND RECOMMENDATIONS

3.1 Before practicing difficult movements, the coach should understand the athlete's ability status in time, and choose appropriate difficult movements according to the athlete's ability. Coaches should also learn more about skills related to cheerleading, and give scientific guidance during training.

3.2 When top athletes are practicing handstand difficult movements, they can practice more handstand movements on flat ground, and exercises to increase core strength appropriately. You should not rush for success when practicing the handstand difficulty of the lift class, but lay a good foundation and master the essentials of the handstand difficulty movement. When a wrong action occurs, the top athletes and the base athletes should communicate in time and correct them.

3.3 Base athletes should strengthen their limbs in training. In addition to the individual qualities of the athletes, it is also necessary to strengthen the cooperative exercises between people. At the same time, the base athletes need to strengthen their awareness of protection during the training process to prevent top athletes from being injured.

3.4 In daily training, more cooperative exercises between base athletes and top athletes are used to increase the tacit understanding and trust between athletes.

### REFERENCES

- [1] Gong Guan. Inquiry into the special strength training methods of the athletes lift the upper limbs on the base of the college skills cheerleading[J]. Contemporary Sports Science and Technology, 2020, 10(09):34-35.
- [2] Liu Jin. Research on the training methods of skill, cheerleading, lift, and somersaults[J]. Slam Dunk, 2019 (12):66.
- [3] Liu De, Wang Yan, Li Tianxin. Research on Difficulty Movements of Small Group Skills in the National Cheerleading Championship in 2018[J]. Sports Fashion, 2020(05):203.
- [4] Liu Yingning. Research on the lifting movements of the cheerleading group event in the World Cheerleading Championships[D]. Beijing Sport University, 2019.
- [5] Chen Chen, Jiang Zhi. The application and analysis of Chinese and foreign skills cheerleading excellent complete single base lifting method [J]. Contemporary Sports Science and Technology, 2019, 9(13): 49-52+54.
- [6] Chen Rong. Technical analysis of the technique of cheerleading, lifting, turning and upward movement[J]. Sports World (Academic Edition), 2018(03):115-116.