Men's Vault

Technical Vault: Front Handspring

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Illustrations by Mas Watanabe and Steve Whitlock

The handspring vault is used as the technical vault in the USA Gymnastics J.O. Compulsory program for all levels. This basic vault does not require complex technique in its performance, but through mastery of the basics, gymnasts will develop and refine essential techniques that will serve them well when learning other more complex vaults. The main components of vaulting (such as running form and speed, hurdle step onto the board, quick and powerful take-off from the board, turn over from the board to the horse and repulsion off the horse) can all be refined and developed by learning a technically good handspring vault.

One of the important and critical technical aspects of the front handspring is the ability to utilize the power of full running speed and body rotation at the take-off without the concern of over rotation. If the gymnast slows down his running speed to control his body rotation in the post-flight, it defeats the purpose of this technical vault. The main focus of this article is to discuss the techniques coaches should look for in order to permit the gymnast to control post-flight rotation.

Physical preparation

1. Body tightness in hollow and arched position

    The mid-section of the body needs to be very strong for the powerful take-off from the board as well as for a strong repulsion off the horse.

2. Handstand hop on the trampoline

    Gymnasts should be able to hold an extended and tight body handstand while hopping on a trampoline. Body tightness in the handstand position is essential for good repulsion from the horse.

3. Shoulder shrug and push off

    With a spotter holding the gymnast's legs in a push up position on the floor, the gymnast hops on the hands in series using shoulder shrug and extension.

4. Leg exercises

    There are many leg exercises that gymnasts can do to develop leg strength for a faster run as well as for a stronger take-off.

    Examples:

    A. Variations of running: stairs, uphill, with weight, etc.

B. Squat jumps, one leg squat, one leg calf raises, etc.

C. Plyometrics - series of hops up to stacked mats, series of jumps over a small block on the running strip, etc.

D. Weights - Push jerk with barbell, leg extensions and curls on a leg machine: With a dumbbell at side, squat down and jump, etc.

Front handspring on the floor

The front handspring taught in tumbling is the essential skill for learning the handspring vault. Since the front handspring in tumbling is often used as a preceding tumbling skill (prior to a complex major skill), the main emphasis of the skill is creating an efficient and powerful body rotation rather than the height and the flight of the handspring itself. In fact, the height of the handspring is rarely emphasized in coaching tumbling. Effective blocking and greater height in the post-flight, however, is essential for proper performance of all the advanced vaults. Floor is the best place to teach how to block from the horse properly and to develop the power essential to make these advanced vaults possible

Next we will look at important ingredients for executing a front handspring on the floor with high flight. There are four critical technical points required to execute the high handspring, including:

1. quick upper body rotation down to the floor,

2. low approach with an open shoulder angle,

3. aggressive push from the front leg and lifting of the back leg, and

4. quick repulsion off the floor.

The technical points of #1 and #3 (above) are the same as emphasizing the quick body rotation in the pre-flight on handspring vault. A quick body turnover from the board to the horse is crucial.

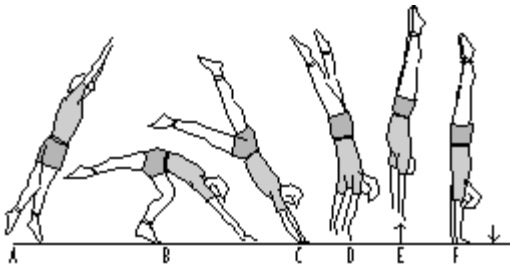
Illustration 1 shows some of the positions described above.

The low angle approach of the arms and shoulders as indicated in Illustration I:B is particularly important for a good handspring vault that has fast body turn over with strong upward leg thrust. The repulsion off the floor must be very fast when the entire body is rotating down to the floor with a lot of speed. The speed and the timing of the repulsion determine the height of the flight and amount of rotation the body will have in the air. Therefore, it is critical to teach good repulsion technique on the floor as the first step.

Following are some examples of floor drills to teach a good handspring vault:

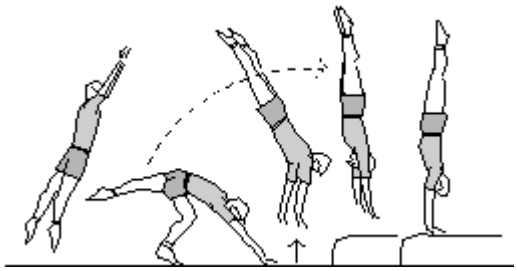
Handspring hop

1. Handspring hop on the floor (Illustration 1)

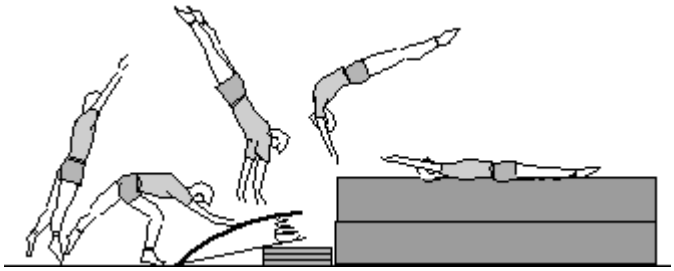


A. Hop to handstand roll
B. Hop to handstand using a hecht action

2. Handspring hop on to an elevated surface (Illustration 2)



3. Handspring hop from a springboard to a landing on the back (Illustration 3)



There are two major points which need to be taught through these drills:

1. Quick push-off from the shoulders

The hands should come off the floor before the center of mass reaches the vertical point: as early as possible.

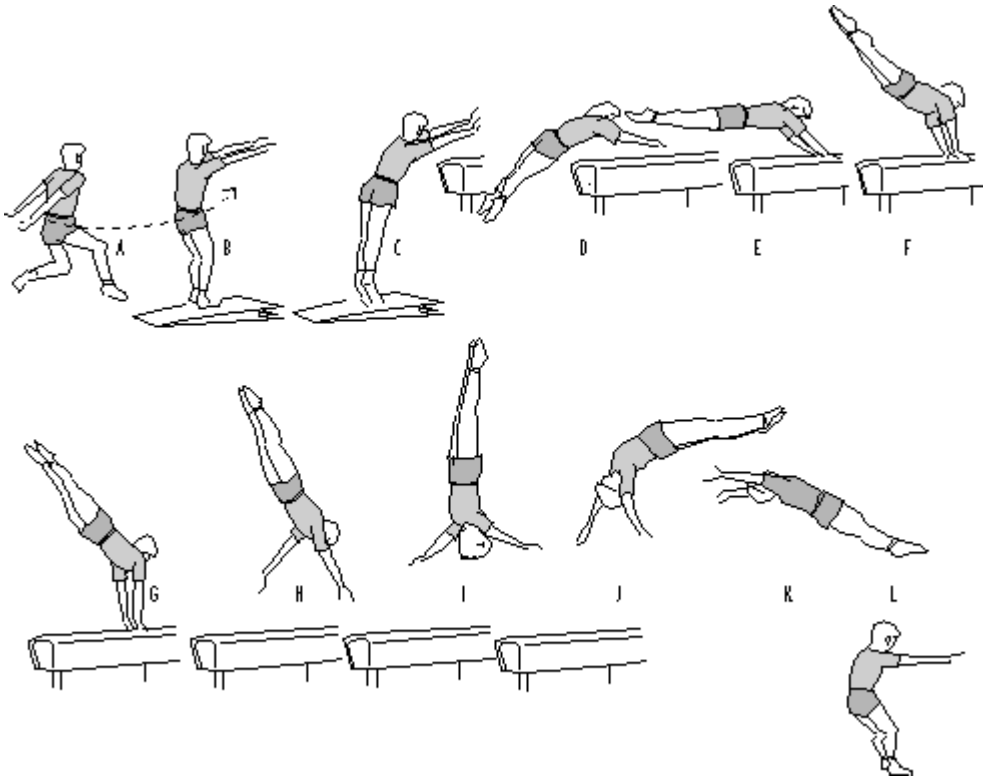
2. Hecht action

To have an effective block, initially the hands and shoulders should block forward (resist closing the shoulder angle). However, additional emphasis needs to be placed on pushing the hands downward as the blocking occurs. This action facilitates a quick lifting of the shoulders in an forward/upward direction. This shoulder action is essential for controlling the entire body rotation in the air during a good handspring vault.

Note: This use of the hecht action is the essential technical difference between

vaults with a single rotation and vaults with multiple somersaults in the post-flight.

Handspring vault



Following are some technical suggestions and pointers which coaches and gymnasts should look for during each phase of the vault.

Running

Ideally, gymnasts should be able to utilize full running speed to execute this vault. This ability increases as the hecht action becomes more efficient. Generally, as a gymnast generates increased speed and rotation, a more vigorous a hecht-action is required.

Approach to the board

The hurdle step onto the board should not be high. The center of mass should travel in a horizontal plane rather than moving up and down. During the hurdle step, the feet should be quickly pulled in front of the body to avoid a forward upper body lean into the horse.

Arm swing

Since the hecht-action is crucial to this vault, an under-arm reach is strongly recommended. The hands should move to the horse as quickly as possible.

Pre-flight

I believe that pre-flight is the most crucial part of the entire vault. Focus on the timing of the heel release and the body/arm angle to the horse.

1. Timing of the heel release

The heels should not be released too vigorously right off the board: however, the heel release begins prior to hands contacting the horse (see Figure #4D). A common mistake in this phase is that the pre-flight is too high and, therefore, the body rotates to the horse too slowly.

2. Body and arm angle to the horse

The body position at the moment of horse contact should be: (see the Illustration 4:E)

- somewhere between 20 to 30 degrees above horizontal,
- as open as possible, and
- the hips should be open without excessive arch.

Repulsion

During the repulsion phase, "how to block" is critical to control body rotation. In order to achieve good height as well as good distance in the post-flight, the hecht action is essential during the block.

Hecht action

The proper hecht-action with the arms is to block the hands forward as well as downward. Forward blocking allows a change from horizontal speed to upward direction and it is essential to attain the maximum height in flight. However, blocking action is not enough to control the tremendous body rotation generated by the heel release. Therefore, additional downward blocking becomes critical to control the entire body rotation in the air. Generally, if a gymnast can generate more speed and body rotation, he needs more downward blocking action. It is essential that the gymnast should not try to control body rotation by slowing down his running speed or the speed of the body rotation. Rather, he should increase downward blocking power in order to control his body rotation in the air.

Head position

As the hands contact the horse, the head should be between the shoulders and should not be lifted too much. The head position is directly related to the shoulder extension. If the head is lifted too high prior to the hand contact, the shoulders will not be as extended as necessary. During the downward blocking action, the head should quickly move in an forward/upward direction to facilitate body counter rotation.

Body position during the post-flight

In the air, the body should be arched mainly from the chest and should remain tight.

The head should be lifted slightly throughout the flight. Also, the head should not be

brought forward too early in preparation for landing rather, the head should remain up until the last possible moment before landing.

The arm movement during the flight is also important. Changing arm position during the post-flight helps control body rotation. After blocking, the arms should be brought upward and open slightly to the side (see Illustration 4:I). The speed of the arm opening (to the side), as well as the timing of this action, have a strong effect on the body rotation. The arm opening action facilitates body rotation in the air. Additionally, the quickness of the arm opening action influences the speed of body rotation. The faster the opening action the more the body will rotate. This arm action is essential for controlling and assuring proper landing position.

Note: The hecht-action technique described should only be applied to gymnasts who have reached a point where their maximum running speed starts to affect their body rotation in the post-flight.

Conclusion

The vaulting event should given the same attention to technical detail as any other event. A vault should be broken down to smaller segments such as running, approach to the board, take-off, pre-flight, repulsion, post-flight and landing. The coach who devotes effort into perfecting these segments will greatly enhance the learning of any type of vault by their athletes. Additionally, the use of proper progressions for each vault is important for developing good technique. Coaches will discover that of time spent on developmental progressions before attempting the entire vault is time well spent.

Finally, along with the proper progressions for each vault, time spent on physical preparation of the gymnasts will assure safe and fast learning.

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