

SPATIAL AWARENESS: AN APPROACH TO BETTER TWISTING SOMERSAULTS

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A VISUAL APPROACH TO BETTER TWISTING SOMERSAULTS

Spatial Awareness: The ability to visually determine one's body position as it relates to the environment while airborne.

The ability to visually determine one's body position while airborne is an essential component in the performance of twisting somersaults. This ability is not an intrinsic gift readily available to all athletes. It is acquired during the learning process of twisting and non-twisting somersault skills. Obviously, skill performance must be done with eyes open for the system to work properly. The advanced athlete can also develop this technique by learning to find key locations in the environment.

During the learning process the athlete is made aware of visual reference points that can be seen and used to assist in the execution of a skill or group of skills. With these reference points established, the learning process is one of constant inquiries by the coach as to, "what do you see?" With this repetitive dialogue the athlete acquires a sense of consciousness of his surroundings.

The integration of spatial awareness with non-twisting and twisting somersaults has led to the growth of a sophisticated technique of somersaulting in the sport of trampoline. This procedure is the foundation for a wide variety of complicated multiple twisting multiple somersaults. This concept has also strengthened the performance of less difficult single somersaults with and without twists. Competition springboard and platform divers use this technique to assist them in their quest to execute a successful entry into the water.

The evolution of advanced multiple twisting multiple somersault skills necessitates that added security be acquired to assist and protect the athlete during the execution of these complicated maneuvers. With this in mind, the strategy is to develop and master the concept of visualization of the take-off surface, selected objects in flight, and the landing surface.

Coaches and athletes in a variety of aerial sports have begun to take advantage of this "seeing" concept and have introduced the procedure in their particular discipline. Visualization allows for a controlled execution of twisting skills. Quite often the "seeing" phenomenon spills over into non-twisting somersault skills. The added dimension of visualization will improve the execution of non-twisting skills and will prepare the athlete for the development of spatial awareness in all phases of rotation.

THE PUCK POSITION

The puck position helped the development of visualization. This body position allows a trampolinist to execute skills involving combinations of twists and somersaults previously considered impossible. The **puck** position, as it is named, is an intermediate (elongated) position between the **tuck** and **pike** positions. The body is bent at the hips and at the knees while the twist is being performed. This body

position is used in a number of aerial sports. The puck position is used only with **multiple somersaults with twists** and is not considered appropriate for single somersaults with twists. (Exception: the tucked barani)

With this principle of multiple somersaults with twists came a new category of skills, many of which could not have been realized if attempted with legs and/or body straight. The combination of twisting multiple somersault skills now have four body positions to work with: tuck, pike, layout, and puck.

Somersaulting around the lateral axis (*across the hips*) in the puck position, combined with twisting around the longitudinal axis (*head to toe*), permits athletes to maintain better eye contact with selected objects in the environment for extended periods. This improved visualization is characterized by a slower twisting action while the increased speed of rotation around the lateral (somersaulting) axis exceeds that of the pike and layout positions.

Twisting in the puck position resembles that of a rolling motion and only **one** twist per somersault is acceptable in some sports. When more than one twist is combined with one of the somersaults of a pucked multiple somersaulting skill, the legs are usually extended and the body is straightened (layout). As this is done, twisting around the longitudinal (long) axis accelerates while somersaulting around the lateral axis decelerates. It would not be preferential to attempt to twist in the pike position

ENVIRONMENTAL IDENTIFICATION

It has become apparent that identification of surrounding objects while performing twisting and other skills is crucial to obtaining a higher degree of success. Visual contact, while executing these skills, is useful in establishing spatial awareness plus the enhancement of the athletes ability to determine time of impact. Knowing what objects in the environment to "spot" through the process of repetition will help develop the necessary spatial awareness needed to perform complicated rotary skills.

Trampoline training, presently being used in a variety of aerial sports, should provide superb opportunities for repeated exposure to **locating** important objects in the surrounding area. While repetition is a necessary element in the development of this process, an understanding of how visual contact can be accomplished is imperative.

Sighting during the performance of twisting somersaults is an essential element in the successful completion of the skill being undertaken. Eye contact with the take-off and landing surface enhances execution and makes possible an extra margin of safety. The possibility for correcting the landing is an additional opportunity afforded the athlete through eye contact with selected objects. There are other organizations that differ in this evaluation of eye contact with selected objects in the environment. One wonders if this concept of eye contact would improve their overall performance??

Spatial awareness has an enormous influence on a variety of aerial sports. Visualization, when properly utilized, permits the athlete to maintain better control of twisting and non-twisting skills while airborne

and when the skill is terminated on landing. It allows for the modification of over or under-rotation as well as the security needed in the performance of these intricate skills.

Early in the learning process, looking for the take-off and landing area must be encouraged so the state of spatial awareness is acquired. There are athletes who have the ability to view the surface area throughout the performance of twisting skills. Others see the surface area for short periods while some see nothing. It is important that the ability to **SEE** be developed to the ultimate.

It is important to note that visualization of one's surroundings is an **awareness** skill - not a **memorization** skill. Because trampolinists perform their skills in a variety of venues, their environment will change repeatedly. Visual awareness of one's spacial relation to the trampoline itself is the key, not the memorization of specific objects viewed when performing skills.

IN THE BEGINNING

There are two fundamental skills that must be realized to establish a foundation for more advanced twisting somersaults. These skills are the barani (front somersault with early one-half twist, not to be confused with a Jona) and the backward somersault with one twist. The twisting action must be learned in the same direction for both front and backward somersaults. This will become a problem with advanced multiple twisting multiple somersaults if ignored. At this point, it is assumed that the front and back somersaults have been accomplished.

It is important to remember the concept, "**Somersault first, twist second**" while learning the twisting single somersault. Failure to follow this idiom may well lead to no somersault and all twist. The outcome could be disastrous, resulting in a head-first landing which is not advisable when performed over a solid landing surface.

The somersault, to be efficient, must originate from the take-off surface. (This is not necessarily true with the twisting phase of the skill.) During the execution of one or more somersaults when the twisting action is contained in the first somersault, it is more efficient to initiate the twisting action from the take-off surface as well. As the number of twists increase, the greater the surface initiation. Proper execution of skills with twists in the first somersault gives the appearance that the twist is initiated while airborne when in fact it is not. (It is possible however, to initiate twisting action in a single somersault while in flight.)

The introduction of rotary motion (somersaulting) around the lateral axis presents the potential for twisting around the longitudinal axis while airborne. A simple test to illustrate this point consists of the following steps.

1. Have the athlete perform a three-quarter (270°) backward somersault with ½ twist (180°) to a back landing on a trampoline.
2. Observe the performance from one side.

3. Have the athlete perform the one-half twist at your spoken command “**left!**” or “**right!**” at the point where the athlete’s body reaches the perpendicular position to the surface of the trampoline.
4. No pre-notification of the direction of twisting is given to the athlete.
5. The athlete must follow the command and twist in the direction given.
6. Repeat this procedure ten times to off-set any guess work by the athlete. It will become clear on completion of this exercise that twisting action can be initiated in a somersault without the use of the take-off surface.

When twisting occurs in the latter phase of multiple somersaults, the twist/twists are executed after the body becomes airborne. This late twisting is quite common in the sport of trampoline and is becoming very popular in other aerial sports. Examples of this technique are seen in a variety of fliffis skills (multiple somersaults with one-half or more twists).

Athletes in these disciplines are finding that late twisting multiple somersaults are more stable and consistent. Eye contact with the landing surface throughout the last twisting somersault magnifies the potential for adjustment on landing. This cannot be said of the multiple somersault with early twists as sighting the landing occurs late in the last somersault and for a shorter period, **IF AT ALL!**

If twisting is to be introduced in the latter somersaults of a multiple somersault skill, the twisting action should **not** begin until the previous somersault is completed. Also, the initiation of twisting action is best accomplished during the first 90° of that particular somersault. If twisting is initiated prior to the completion of the previous somersault, under-rotation of the somersault is usually the result. If twisting is initiated after the first 90°, over-rotation is often the outcome. In other words, don’t initiate twisting too early or too late.

SURFACE EYE CONTACT

The concept of developing eye contact with the take-off and landing surface of the trampoline bed, during the learning phase of forward and backward twisting somersaults, is often misunderstood. Quite often confusion is shared by both coach and athlete when the concept is first introduced. The confusion occurs when the athlete tries to fix his gaze on one specific spot on the trampoline bed. The result is an unexpected termination of the twisting action at approximately one-half twist. The eye contact technique can be confusing for a newcomer, but any initial confusion can be easily overcome when properly diagnosed.

While performing front or back twisting somersaults, sighting the surface below **must not be confined to one central point**, as is the case with a barani. When a fixed point is sighted by the athlete, the twisting action is not functional beyond the one-half twist around the longitudinal (long) axis. When the twisting action reaches approximately 180° and the eyes are focused on a single location, the head will not continue to turn in the direction of the twist. At this point, the head begins to turn in the opposite direction of the intended twist. The body cannot continue to turn in the intended direction with

the head now moving in the opposite direction. This counter movement disrupts the twisting action.

While learning the full twisting forward somersault the athlete will, in some cases, twist 180° in one direction and 180° in the opposite direction giving the athlete the sensation of a complete 360° twist in the same direction. This predicament sometimes occurs with the backward twisting somersault. The coach, at times, may not be aware of the reversed direction of the twist. Perhaps, the most common advanced skill in which this phenomenon occurs is the half-in, half-out fliffis; (double backward somersault with one-half twist in the first somersault and one-half twist in the second).

To correct this dilemma in single somersaults with one twist, the athlete must learn not to visually concentrate on one central location of the landing surface. Since a twisting skill is being learned, it follows that the performer should have a circular view of the area below rather than a central point. In other words, "look where you are going." The head must continue to turn in the same direction around the longitudinal (long) axis as the arms and body. This must continue throughout the duration of the skill. On completion of the twisting somersault the athlete can then fixate on one central point for the landing. If the technique is accomplished correctly the athlete can see the trampoline bed during the entire twisting action.

Athletes who accomplish twisting somersault skills with the visualization technique will enjoy a decided advantage over their contemporaries. They will have extensive knowledge of the concept and function of spatial awareness. "Seeing where you are going" is a decided advantage to the user for both success and failure, i.e. success in performing a skill of grace, and the saving of one's neck in failure. If sighting the landing area is an established habit, a learned skill, then the outcome of the performance is more readily predictable.

THE BARANI SOMERSAULT AND THE ROUND-OFF

The Barani Somersault

The barani somersault is a trampoline skill similar to the front somersault with one-half twist and the round-off which is used in tumbling. Like the round-off, and unlike the front somersault with one-half twist, the head is held erect and the eyes are fixed on the take-off surface. The barani and round-off twisting action occurs early during the forward rotation around the lateral (somersaulting) axis. The twisting action in the front somersault with one-half twist occurs later during the somersaulting action. The early twist and erect head in the barani, and round-off, allows the athlete to view the take-off and landing surface below throughout the execution of these skills.

The barani is an excellent skill to use when developing a variety of front twisting somersaults. With the mastery of this basic skill an unlimited number of front twisting somersault skills can be accomplished.

During the learning phase of twisting somersaults it is **crucial** that all airborne twisting action around the longitudinal (long) axis be performed in the **same direction for all twisting skills with front or**

backward rotation. This rule-of-thumb becomes very apparent as more complicated twisting skills are undertaken.

During the learning phase, the twisting action of the barani and the round-off can be confusing to the athlete as well as the coach. Often the direction of the twist is thought to be one way when in fact it is the opposite. The twisting direction can be determined in a simple and concise manner. View the athlete from the side. If viewed from the right side of the athlete and the twist is **right to left**, the back will be seen. If viewed from the right side and the twist is **left to right**, the stomach will be seen. The same results can be confirmed if the athlete simply turns to the right or left while standing upright.

Front somersaults with twists have undergone a dramatic change in recent years. Previously it was assumed necessary to bend at the waist to begin somersaulting then extend the body while twisting. On completion of the twist, the hips were flexed again to complete the skill. This has proven to be an inferior technique. A more efficient system has been developed in the sport of trampoline and can be referred to as the "**Straight-body ascent.**"

During the barani take-off, the body should be as straight as possible when somersaulting forward around the lateral axis. In addition, there should be a slight lean in the direction of the somersault. Leaning places the center of gravity in front of the application of force (feet) causing forward travel while somersaulting. As the barani begins, the legs and feet are lifted forcefully up behind the body, as in the back uprise used on the parallel bars or still rings. Lifting of the hips is incorporated into the rotary (somersaulting) action with little to no flexion during the initial stage of rotation (somersaulting). Emphasis is placed on lifting the legs not the hips.

As the legs rise the body straightens, causing the athlete to assume the "**straight-body ascent**" position. The chest, head, and upper body are propelled upward with maximum force with arms leading the way overhead. As the body lifts and rotates (somersaults), the arms are extended and swing forcefully downward simultaneously. The arms should be positioned at shoulder width in front of the body. The head is held erect so eye contact is maintained with a point on the surface below and in front of the body throughout the complete 360° somersault.

As the forward rotation develops and the legs swing upward and overhead, the arms continue to swing down and come to an extended position along both sides of the body. The head is held erect and rotates with the shoulders and chest forcefully around the longitudinal (long) axis in the direction of the desired twist. As somersaulting and twisting occurs, it appears that the body is somersaulting around a fixed point, the head. The ½ twisting action should be completed at 180° of rotation around the lateral (somersaulting) axis. At this position, the body is inverted, straight, and with arms by the sides. The athlete is perpendicular to the surface below and viewing the location of impact.

As the body completes the somersault and descends to the landing surface, the hips are flexed **if necessary**, to insure a stable landing. On landing, the athlete will be facing the opposite direction from take-off.

The straight arm position may be adjusted to fit the needs of the athlete **but is not recommended**. During the learning phase of this skill, if the performer feels awkward with the arms straight and by the sides, flexion of the arms may assist in successful completion of the skill. **However, in the final analysis, the arms should be kept as straight as possible and by the sides.** There is little perception of twisting when a barani is performed properly, it is more of a gradual turning sensation.

Individuals learning a barani often land with both arms positioned in the opposite the direction of the twist. This arm position conveys the sensation that more than one-half twist has been accomplished when actually less than 180° of twisting has occurred. Because the arms are trailing behind and have not completed the necessary 180° of twisting action, there is a sensation of twisting towards the pull of the arms.

This assumption causes the athlete to attempt to turn in the direction of the trailing arms. If this feeling persists the athlete will, in effect, twist back to the starting position and in the opposite direction intended. When this occurs one might think that a complete 360° twist has been accomplished. Using the method described earlier to determine the direction of a twist, it becomes apparent that only one side of the athlete can be viewed. Both sides of the athlete are seen when a full 360° twist is completed properly.

On completion, the athlete should land upright facing the opposite direction of take-off. The eyes are focused on the landing surface in front of the point of impact with arms down and hands below or near the level of the waist. If another skill is performed in sequence with the barani, the arms swing upward and overhead on rebound in preparation for the next skill.

THE FORWARD SOMERSAULT WITH ONE TWIST

With the barani properly learned and eye contact with the landing surface well established, the front somersault with one full twist is the next logical front twisting skill to learn. **At this point in the learning process, the barani is used as the foundation to develop front twisting somersaults.** The technique used to learn the front somersault with one twist can be expanded to learn other front twisting skills.

The application of the “part method” of learning will allow the athlete to master the intended twisting skill as well as develop visual contact with selected objects and the landing surface below.

While learning how to complete a full twist, the amount of twist is gradually increased prior to landing. This gradually increased twisting strategy is known as the “part method.”

In order for the athlete to develop visual contact with a stationary object while learning twisting somersaults, a person (or object) is placed at the three-quarter (270°) twisting position of the desired twist. This position is located on the right or left side of the athlete during the execution of a barani. To begin the part method, as the barani is completed and a landing is made, the athlete rebounds and turns the head and shoulders in the direction of the stationary object located at the 270° mark. If a person is

used to designate the 270° position, a voice command can also be used to help the athlete pinpoint the correct locale.

This part method procedure is repeated, with the object (person) being visually located and the twist completed, up to that point. As the athlete's twisting ability progresses the object or person is moved closer to the 360° position. This process continues until the full twist is mastered. We now have a full twisting somersault with visual contact of the surface below.

The arms as well as the head and chest must move in the direction of the twist. If the eyes remain fixed on one location, as in the barani, the body will turn in the desired direction to a point, but the head will not. This counter action will cause the twisting action to terminate prior to completion. The athlete must constantly look in the direction of the twist. When the front somersault with one twist is accomplished, visualization is strengthened. The twisting action can be done with arms flexed or straight.

THE BACKWARD SOMERSAULT WITH ONE TWIST

The technique used to teach twisting in forward somersaults is also used to teach twisting in backward somersaults. The part method of learning is put into effect as described previously. At the beginning of the learning process, the athlete is encouraged to perform a backward somersault with a **late** one-half twist. This late twisting action is repeated until the skill becomes stable. After the late twisting skill becomes stable, the twisting action is started a little earlier so that more than 180° of twisting can be achieved. It is essential to start the learning process with the late twist so that the athlete becomes aware of the importance of **somersault first, twist second**. If the athlete fails to follow these instructions strange things will happen, i.e. a half twisting back dive.

To develop visual contact with selected objects while performing a one-half twisting backward somersault, an object or person is placed to the side of the athlete at the three-quarter (270°) twisting position. At the point of impact on completion of the back half-twister, the athlete rebounds and turns the head and shoulders in the direction of the object at the 270° mark. As in the front twister, sound can also be utilized to help locate the precise position.

Gradually the amount of the twist is increased prior to landing. As the skill progresses, the object or person is moved closer to the 360° position. This procedure is repeated until the object is visually located and the twist is completed to that point. The same process continues until a full twist is mastered. We now have a twisting somersault with visual contact of the surface below.

Backward twisting somersaults are performed with straight body and with little to no flexion at the knees. The lift-off is forceful with slight backward lean causing the athlete to travel backward. The head and chest are propelled upward as the arms swing vigorously overhead fully extended for maximum lift. As backward rotation around the lateral (somersaulting) axis begins, the legs are lifted upward. The head is kept in line with the lead shoulder but slightly back so that the surface below is viewed over the

shoulder.

As this occurs, the lead twisting arm swings downward and back in the direction of the twist. The elbow is flexed and the hand is raised coming to rest on or near the chest. The opposite arm (swing arm) swings across and in the direction of the twist. Flexion occurs at the elbow and the hand is raised and placed on or near the chest. Both hands are now placed on or close to the chest.

Twisting begins on take-off as the head is turned in the direction of the twist. At approximately 90° of the backward somersault virtually one-quarter of the 360° of twisting should be completed. When properly executed, eye contact is never lost during the twisting phase of this skill. The twisting arm position is now the same as the front somersault with twists.

On completion of the twisting action (between 180° and 270° of the somersault) the arms are extended down and the hips are flexed if necessary. If the somersault is under-rotated there will be greater flexion at the hips. If the somersault is rotated properly, flexion at the hips is minimal. If over-rotation is the diagnosis, landing will be difficult. This can be determined by the athlete if the landing surface is in proper view during and on completion of the skill. The same holds true with all twisting somersaults.

Twisting with arms straight or flexed is acceptable and frequently both methods are used in multiple twisting multiple somersaults.

CONCLUSION

The speed and number of twists will have a bearing on when the twisting action is completed. By maintaining a straight body in both front and back somersaults, the twist can begin early or late depending on the number of twists to be performed.

If properly coached, most athletes can and will be able to twist with arms straight and maintain visual contact throughout the twisting action. Those individuals having trouble developing eye contact with the trampoline bed can, at minimum, be taught to observe the start and finish of the skill.

Form is important only after a skill has been learned. If the athlete must be concerned about form while learning, learning will be demanding. Debilitating injuries are a very real possibility when highly complicated skills are being learned. With this in mind, there should be one major thought while learning a skill and that is to complete the skill without injury.

In addition, a successful coach must have an eye for constructive analysis. The coach must possess the ability to evaluate and correct defects no matter how insignificant they may be, as this ability is essential in the development of a champion.

Somersaulting, as described, indicates that **leaning** is necessary to accomplish forward and backward rotation around the lateral axis. Leaning will cause the athlete to travel in the direction of the somersault and must be of a minute distance.

If leaning is not appropriate for the skill being performed there is another method that can be used to accomplish somersaults. The body is flexed or arched on take-off, depending on the direction of the somersault, so that the center of gravity is outside the body and over the base (feet). This causes the athlete to lift straight up (depending on the amount of flexion or arch), or to travel in the opposite direction of the somersault action. Somersaulting can be accomplished forward and backward by using this method when it becomes necessary.

SUGGESTIONS FOR PROPER EXECUTION

1. Always keep the eyes open and look where you are going during the execution of a skill.
2. Turn the head, shoulders and arms in the direction of the twist.
3. The eyes should view the surface below.
4. Never drop the head down or turn it in the opposite direction of the twist when performing front twisters.
5. Never drop the head straight back on back twisters. Keep the head in line with the body and turn it in the direction of the twist.
6. Keep the arms in close to the body. There is no need to raise the lead twisting arm over the head. This blocks the view of the surface below.
7. Keep the body straight while twisting.
8. Mentally visualize the skill before actual performance.
9. Break down the twisting action mentally into segments so you have a good idea of where you are while airborne.
10. Do not fix the eyes on one central point while performing twisting somersaults. The barani is the exception.
11. Somersault first, twist second.
12. Twisting speed should increase with additional twists up to a maximum rate. The rate of acceleration will vary with the number of twists. Deceleration will be consistent with the rate of acceleration.
13. The force of the swinging action of the arms will increase with the addition in the number of twists.
14. Surface initiation increases with the addition in the number of twists when the twisting action is in the first somersault.
15. Twisting action with early twisting somersaults begins on lift-off.
16. Rotation around the lateral (somersaulting) axis begins on take-off during the lifting action.

17. Twisting around the longitudinal (long) axis is more efficient and best controlled during somersaulting when twisting is introduced during the first 90° of the somersault.
18. Always twist in the same direction with forward and backward somersaults.
19. The exception to number 18 is the round-off.
20. Height and distance from the point of take-off will have a bearing on the speed of somersaulting as well as the speed of the twist. The further you travel the more difficult the skill.
21. The arms should swing in the direction of the twist. Let the body go to the hands.
22. If the head is down during the twisting action and the body inverted, the landing surface can not be seen. The eyes would view the ceiling and this can cause problems.
23. Learn the skill and then work on form.
24. Be sure the mind comprehends what the body is doing.
25. Look at the landing surface for as long as possible during the completion of the skill.
26. Be aware of key objects in the environment so this awareness will carry over to other twisting skills.
27. By having a view of the surface below, the landing of a skill can be corrected if required.