Continuous Spin Checklist (Synchronized Swimming)

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Transition Phase:
The continuous spin is a skill that is performed in synchronized swimming in which the athlete is upside down in the water with the feet out of the water to a level just above the knees. The position is initially assumed from an upside down sculling position with the body stationary, then the arms are dropped toward the bottom of the pool in the transition phase from sculling the spinning. The shoulders undergo shoulder flexion in this phase from a position of shoulder abduction of about 45º out to the sides of the body to a position of shoulder flexion above the head. The role of the top (left) arm is suggested to be to support the body in the water and the role of the right arm is to produce rotation of the body in the spin.

Since the top arm (the one above the head) is primarily used to keep the legs out of the water, it’s role is primarily supportive. These arm movements consist mainly of lift type movements that keep the body up by a series of sculling motions using lift forces. The lower arm (held at around face level throughout the stroke) has the role of rotating the body clockwise. This rotation is produced mainly by a paddling motion of this lower arm and hand as it pushes the water counterclockwise (to the left) to rotate the body clockwise.

Transition 1  Transition 2  Transition 3
The top arm (the right arm) is held extended above the head pointing directly to the bottom of the pool for the majority of the skill. The arm undergoes small range rotational movements that consist of pronation/supination of the lower arm and shoulder medial and lateral rotation. The shoulder is in 180° of flexion and the elbow is extended for much of the spin. The palm faces the bottom of the pool while performing circular movements to create lift over the top of the hand to keep the swimmer up. These movements produce a circular motion of the hand above the head that creates lift. Lift is created because the hand is kept flat to the bottom of the pool and pitched slightly to the direction of travel. This hand position and the hand velocity will produce lift forces to keep the legs suspended out of the water.

**Bottom Arm (left Arm) (Arm kept at shoulder/head level)**

The bottom arm (the left arm) is held flexed across the chin and head for the majority of the stroke. Hand and arm must be kept above or at the level of the shoulders, movements should occur in front of the face and not in front of the trunk. The arm is moved towards and away from the midline of the trunk while kept in a position almost horizontal to the bottom of the pool. The left arm is used to repeatedly push the water to the left, using the hand like a paddle. The hand paddle is moved using shoulder medial rotation and shoulder horizontal adduction along with elbow flexion. The arm is recovered using shoulder horizontal abduction with the elbow flexed. This paddle will produce the spinning of the body. After the push toward the mid line, the shoulder is then horizontally abducted to the side to bring the hand back into position to push against the water. This is the recovery phase of the left arm movement.

**Right Shoulder:**

- Starts at a position of 180 degrees of flexion and extends 15 degrees (to 165 degrees of flexion) as the athlete medially rotates at the shoulder
- Medial rotation and pronation begins when the elbow is in full flexion (after the pull has been completed) and lateral rotation and supination begin when the elbow is near full extension (after the push has been completed)
Right Elbow:
- The elbow starts at 25 degrees of flexion (at the end of the push) and goes into 60 degrees of flexion (from anatomical) as the pull is initiated
- Time for elbow to go into flexion = 0.25 seconds
- Time for elbow to go into extension = 0.25 seconds

Right Wrist:
- The wrist is in 60 degrees of hyperextension in its maximum position and almost neutral during its minimum position
- The wrist flexes to near neutral during the pull (elbow flexion) and during the push (elbow extension) the wrist goes into hyperextension
- Palm faces up towards the top of the pool during the pull and faces to the bottom of the pool during the push
- 0.5 seconds for 1 complete arm cycle (push and pull)
Top Arm (Left Arm)

**Left Arm:**
Right shoulder remains almost fully flexed at the shoulder so the upper arm is always pointing to the bottom of the pool and is extended above head level with the elbow extended
Elbow flexion of the right arm is minimal—only about 30 degrees of flexion should occur during the sculling motions
Hand of the left arm should remain facing the bottom of the pool during the stroke, to ensure that the sculling movements will produce lift in the direction of surface of the water

**Left Shoulder:**
- The right shoulder has 95 degrees of flexion at its minimum value and flexes to 135 degrees at its maximum value going through a range of 40 degrees of flexion

![Image: Right Shoulder 96.6° and 130.7°]

- The left shoulder has 25 degrees of hyper abduction at its maximum value and is adducted through 80 degrees during the push to a minimum abduction angle of 120 degrees

![Image: Left Shoulder 26.5° and 119.7°]
- From a position of maximum flexion at the elbow and shoulder (during the beginning of the push) the shoulder goes through medial rotation in conjunction with elbow extension. At a position of maximum elbow extension (during the pull) the shoulder goes through lateral rotation in conjunction with elbow flexion.

**Left Elbow:**
- The left elbow has 90 degrees of flexion at the end of the pull (at max. shoulder flexion and hyper abduction)
- As the shoulder adducts (during the push), the elbow extends so the hand is above the head to 50 degrees of elbow flexion (going through a ROM of 40 degrees).

- This is beneficial as the elbow is extended above the head as opposed to in front of the body in order to keep the moment of inertia of the body lower by decreasing the radius of gyration and help increase the angular velocity during the spin
- The motion of the forearm and hand should occur in front of the swimmers face
**Left Wrist:**
- The palm of the hand should be facing upwards to the pool surface during the pull and downwards to the bottom of the pool during the push
- Wrist hyperextension should increase during the pull to decrease the size of the paddle and decrease during the push in order to increase the size of the paddle
- Time for the push = 0.267 seconds
- Time for the pull = 0.267 seconds
- Time for 1 complete arm cycle = 0.534 seconds

**Trunk and Lower Body**
- Remain vertical in the water throughout the spin
- Knees and ankles of both feet must remain in contact with each other
- Toes pointed and perpendicular to the surface of the water
- Neck and trunk in alignment perpendicular to the surface of the water
- Arms move in synch with each other. Both are in a position of abduction/adduction at the same time.