

# Stroke Technique & Injury

# CHEAT SHEET



## Backstroke

## Breaststroke

## Butterfly

## Freestyle

### SHOULDER INJURIES

Problem	Solution
<p>1. Flat body position in the water</p> <p>2. Wide, swinging arm recovery requiring excessive internal rotation (impingement) in the joint</p> <p>3. Thumb in first with hand entry, excessive internal rotation in shoulder</p> <p>4. Dropped elbow or straight arm pull through, makes a long lever which overloads the shoulder</p> <p>5. Hand entry across the midline of the body</p>	<p>1. Good body roll and bilateral breathing</p> <p>2. High, bent elbows during recovery, facilitated by good body roll</p> <p>3. Flat hand fingers first during entry</p> <p>4. High elbow/bent arm pull through</p> <p>5. Hand should enter in line with the shoulder and not pass over to the other 'side' of the body</p>

### Solution

1. Strong powerful kick and good body undulation will allow momentum to lift and breathe
2. Wider hand entry, hands in line with shoulders and not touching each other
3. Ensure bent, high elbows during pull through

1. Fitness and conditioning
1. Strengthening the deep neck flexors and posture correction

### KNEE INJURIES

Problem	Solution
<p>1. Hyperextended (bowed backwards) locked knees</p> <p>2. Forceful contraction during flutter kicks and repeated pushing off the wall</p>	<p>1. Hyperextended (bowed backwards) locked knees</p> <p>2. Forceful contraction during flutter kicks and repeated pushing off the wall</p>
<p>1. Kick with relaxed legs, kick from the hips</p> <p>2. Strengthen quadriceps, hip and buttock muscles</p>	<p>1. Kick with relaxed legs, kick from the hips</p> <p>2. Strengthen quadriceps, hip and buttock muscles</p>

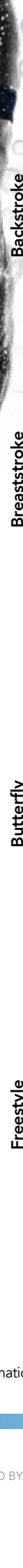
### Solution

1. Hip problems – wide, open kick; inability to turn legs and feet out enough, lack of hip extension
2. Ankle stiffness
1. Narrower kick. Improved rotation of legs and extension at hip offloads the knee, achieved through exercises and physical therapy
2. Increased ability lifting foot upwards and turned outwards offloads knee

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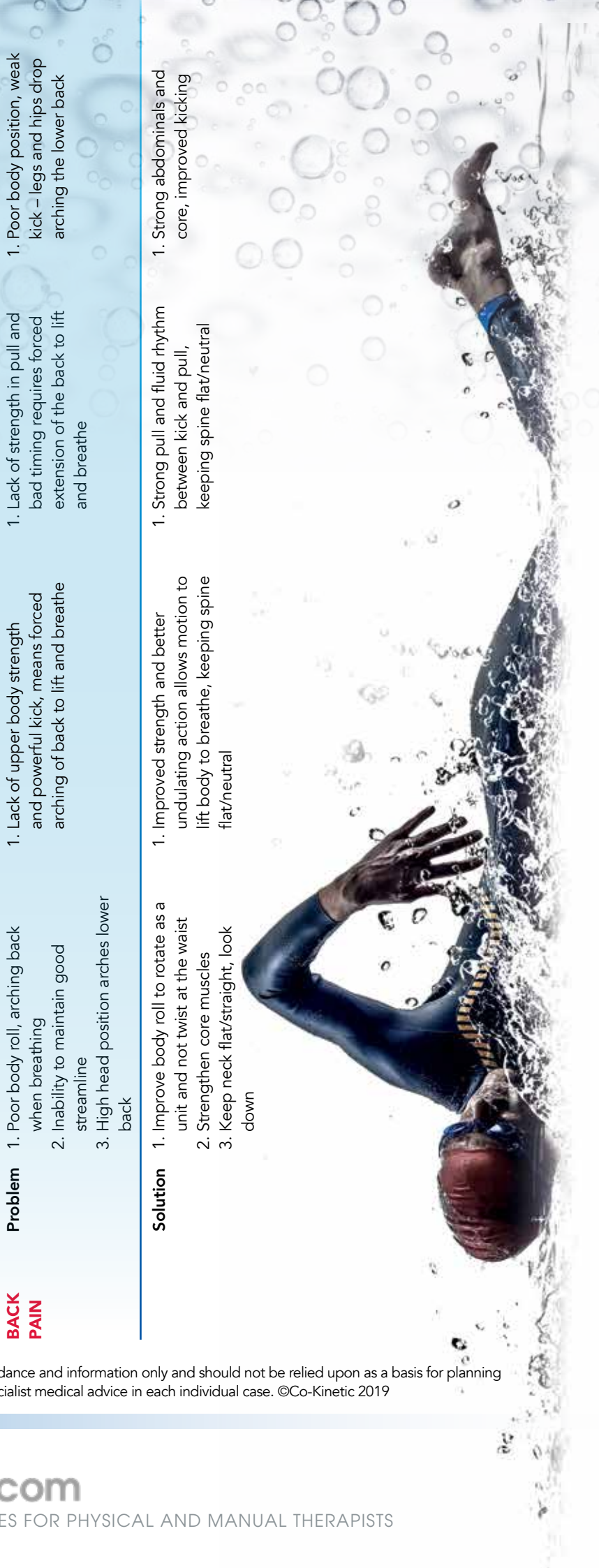
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	Freestyle	Butterfly	Breaststroke	Backstroke
<b>NECK PAIN</b>	<p><b>Problem</b></p> <ol style="list-style-type: none"> <li>Lack of body roll, flat body position</li> <li>One sided breathing</li> <li>Looking ahead of you</li> </ol> <p><b>Solution</b></p> <ol style="list-style-type: none"> <li>Learn good body roll</li> <li>Bilateral breathing (breathing to both sides, or on every third stroke)</li> <li>Look down to the bottom of the pool</li> </ol>	<ol style="list-style-type: none"> <li>Extending neck (lifting up) to breathe</li> </ol> <ol style="list-style-type: none"> <li>When breathing in look slightly down and forwards, keeping neck straight not arched back</li> <li>Powerful pull, strong kick and good undulating motion allows momentum to lift you to breathe rather than actively using neck muscles</li> </ol>	<ol style="list-style-type: none"> <li>Extending the neck (lifting up) to breathe</li> </ol> <ol style="list-style-type: none"> <li>When breathing in look slightly down and forwards, keeping neck straight not arched back</li> <li>Powerful pull, strong kick and good undulating motion allows momentum to lift you to breathe rather than actively using neck muscles</li> </ol>	<ol style="list-style-type: none"> <li>Weak anterior neck muscles, associated with poor posture, difficulty holding head position</li> <li>Strengthening the deep neck flexors and posture correction</li> </ol>

<b>BACK PAIN</b>	<ol style="list-style-type: none"> <li>Poor body roll, arching back when breathing</li> <li>Inability to maintain good streamline</li> <li>High head position arches lower back</li> </ol> <p><b>Solution</b></p> <ol style="list-style-type: none"> <li>Improve body roll to rotate as a unit and not twist at the waist</li> <li>Strengthen core muscles</li> <li>Keep neck flat/straight, look down</li> </ol>	<ol style="list-style-type: none"> <li>Lack of upper body strength and powerful kick, means forced arching of back to lift and breathe</li> </ol>	<ol style="list-style-type: none"> <li>Lack of strength in pull and bad timing requires forced extension of the back to lift and breathe</li> </ol>	<ol style="list-style-type: none"> <li>Poor body position, weak kick – legs and hips drop arching the lower back</li> </ol>
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