

# Stroke Technique & Injury

# CHEAT SHEET



	Freestyle	Butterfly	Breaststroke	Backstroke
<b>SHOULDER INJURIES</b>	<p><b>Problem</b></p> <ol style="list-style-type: none"> <li>1. Flat body position in the water</li> <li>2. Wide, swinging arm recovery requiring excessive internal rotation (impingement) in the joint</li> <li>3. Thumb in first with hand entry, excessive internal rotation in shoulder</li> <li>4. Dropped elbow or straight arm pull through, makes a long lever which overloads the shoulder</li> <li>5. Hand entry across the midline of the body</li> </ol> <p><b>Solution</b></p> <ol style="list-style-type: none"> <li>1. Good body roll and bilateral breathing</li> <li>2. High, bent elbows during recovery, facilitated by good body roll</li> <li>3. Flat hand fingers first during entry</li> <li>4. High elbow/bent arm pull through</li> <li>5. Hand should enter in line with the shoulder and not pass over to the other 'side' of the body</li> </ol>	<p><b>Problem</b></p> <ol style="list-style-type: none"> <li>1. Heavy reliance on arms lifting chest from water to breathe</li> <li>2. Hand entry with hands together can cause impingement</li> <li>3. Straight arm pull through make a long lever and overloads the shoulder</li> </ol> <p><b>Solution</b></p> <ol style="list-style-type: none"> <li>1. Strong powerful kick and good body undulation will allow momentum to lift and breathe</li> <li>2. Wider hand entry, hands in line with shoulders and not touching each other</li> <li>3. Ensure bent, high elbows during pull through</li> </ol>	<p><b>Problem</b></p> <p>Not common for breaststroke, shoulder injuries would originate from general fitness training, most often using freestyle</p> <p><b>Solution</b></p> <ol style="list-style-type: none"> <li>1. Fitness and conditioning</li> </ol>	<p><b>Problem</b></p> <ol style="list-style-type: none"> <li>1. Weak anterior neck muscles, associated with poor posture, difficulty holding head position</li> </ol> <p><b>Solution</b></p> <ol style="list-style-type: none"> <li>1. Strengthening the deep neck flexors and posture correction</li> </ol>
<b>KNEE INJURIES</b>	<p><b>Problem</b></p> <ol style="list-style-type: none"> <li>1. Hyperextended (bowed backwards) locked knees</li> <li>2. Forceful contraction during flutter kicks and repeated pushing off the wall</li> </ol> <p><b>Solution</b></p> <ol style="list-style-type: none"> <li>1. Kick with relaxed legs, kick from the hips</li> <li>2. Strengthen quadriceps, hip and <small>buttock muscles</small></li> </ol>	<p><b>Problem</b></p> <ol style="list-style-type: none"> <li>1. Hyperextended (bowed backwards) locked knees</li> <li>2. Forceful contraction during flutter kicks and repeated pushing off the wall</li> </ol> <p><b>Solution</b></p> <ol style="list-style-type: none"> <li>1. Kick with relaxed legs, kick from the hips</li> <li>2. Strengthen quadriceps, hip and <small>buttock muscles</small></li> </ol>	<p><b>Problem</b></p> <ol style="list-style-type: none"> <li>1. Hip problems – wide, open kick; inability to turn legs and feet out enough, lack of hip extension</li> <li>2. Ankle stiffness</li> </ol> <p><b>Solution</b></p> <ol style="list-style-type: none"> <li>1. Narrower kick. Improved rotation of legs and extension at hip offloads the knee, achieved through exercises</li> </ol>	<p><b>Problem</b></p> <ol style="list-style-type: none"> <li>1. Poor body position, weak kick – legs and hips drop arching the lower back</li> </ol> <p><b>Solution</b></p> <ol style="list-style-type: none"> <li>1. Strong abdominals and core, improved kicking</li> </ol>

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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>	<p>1. Extending neck (lifting up) to breathe</p> <p>1. When breathing in look slightly down and forwards, keeping neck straight not arched back</p> <p>2. Powerful pull, strong kick and good undulating motion allows momentum to lift you to breathe rather than actively using neck muscles</p>	<p>1. Extending the neck (lifting up) to breathe</p> <p>1. When breathing in look slightly down and forwards, keeping neck straight not arched back</p> <p>2. Powerful pull, strong kick and good undulating motion allows momentum to lift you to breathe rather than actively using neck muscles</p>	<p>1. Weak anterior neck muscles, associated with poor posture, difficulty holding head position</p> <p>1. Strengthening the deep neck flexors and posture correction</p>
<b>BACK PAIN</b>	<p><b>Problem</b></p> <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>	<p>1. Lack of upper body strength and powerful kick, means forced arching of back to lift and breathe</p> <p>1. Improved strength and better undulating action allows motion to lift body to breathe, keeping spine flat/neutral</p>	<p>1. Lack of strength in pull and bad timing requires forced extension of the back to lift and breathe</p> <p>1. Strong pull and fluid rhythm between kick and pull, keeping spine flat/neutral</p>	<p>1. Poor body position, weak kick – legs and hips drop arching the lower back</p> <p>1. Strong abdominals and core, improved kicking</p>

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