# SMI surfing injury prevention training

#### **Authors:**

S.E. Heitkamp, MSc., F.L.A.M. Kemps, MSc., J.M. Kooijman, MA., BSc., L.C. Langenberg, MD., L. Veith-Gruber, MD., N. Masal, BSc., M. Göttinger, MD., D. van de Schoot, MD., O.M. Markovic, MD, I. Berg, MD.

## Index:

- 1. Duck walk
- 2. Scorpion
- 3. Jumping lunges
- 4. Spine routine with diaphragm breath hold
- 5. Swiss ball twist 5 kg
- 6. Scapular pull-ups
- 7. External rotation seated dumbbell
- 8. Thumb circle
- 9. Scapular push-ups
- 10. Dynamic balance squat at bosuball

## 1. Duck walk

- Purpose: to enhance hip mobility and lower limp strength
- Starting position is the `Asian chair', lower your hips down towards the floor while keeping your heels on the floor (when in doubt, see instructions from level 1)
- Try to walk forward and keep your knees pointing outwards in line with your 3th toe
- 5 meters forwards and 5 meters backwards, 3 sets
- To intensify the exercise, make bigger steps or walk in reverse, keep your arms up in the air





#### 2. Scorpion

- Purpose: to enhance spine mobility
- Lay in prone position, facing down (picture 1)
- Remain both arms on the floor during the whole exercise
- Bend your right knee, lift your right hip up in the air as far as possible (picture 2)
- Try to touch the floor with your right toes on the left side of your hip (picture 3)
- 3x10 repetitions left and right
- To intensify the exercise you can reach towards your hands instead of the floor







Picture 1

Picture 2

Picture 3

### 3. Jumping lunges

- Purpose: to improve lower limp stability and strength
- Start in lunge position: your back knee almost touching the floor, front knee above ankle, torso straight (picture 1)
- Tilt your pelvis slightly backwards by slightly pulling in your navel
- Jump and alternate your legs (picture 2 and 3)
- Make sure your front knee is straight above your ankle and flexed in a 90 degree angle. The pelvis is horizontal
- 3x10 repetitions
- To intensify this exercise, keep your arms straight up in the air



Picture 1



Picture 2



Picture 2

#### 4. Spine routine with diaphragm breath hold

Make sure you have a buddy with you when performing this exercise and do this routine in a secure environment.

It's the same routine as level 1, but now with a breath hold.

- Purpose: to train your breath hold and mental composure in bigger waves or longer wipe-outs
- Start with a deep inhalation: imagine your belly as a balloon and fill it with air
- When the belly is filled with air, expand the ribs to the sides by inhaling extra air into the thorax
- Do 4 repetitions of 4 seconds: breath in during 4 seconds, according to above described inhalation technique, and breath out again, let all the air flow out of your lungs within 4 seconds
- Then breath in fully, hold your breath, relax your muscles and try to do the stretching routine on this single inhale. See instructions for this routine in level 1
- If you can't hold your breath any longer or if you finish the stretching routine, breathe out deeply and then breath in
- Don't forget to relax your muscles and be calm, just like in a wipe-out



#### 5. Swiss ball twist

- Purpose: to enhance core stability
- Lay in bridge position on top of a swiss ball (60cm diameter)
- Extend your arms, facing the ceiling, holding a weight with both hands (ball or dumbbell) (picture 1)
- Rotate the weight in a semi-circle from the left (picture 3) and to the right (picture 4) and vice versa
- Try to keep your hips horizontal and still in the same position while moving your upper body
- 3x10 repetitions
- To intensify the exercise, you can increase the weight









Picture 3



Picture 5

#### 6. Scapular pull-ups

- Purpose: to enhance shoulder strength and coordination
- Hang down from the bar, arms extended, feet off the floor
- Relax your shoulders, descending your body as far down as possible (picture 1)
- In this position, try to pull your shoulder blades backwards and downwards in the direction of your lower back (picture 2)
- Your arms remain extended during the whole exercise
- Hold each position (up and down) for 1 second. Repeat 3 sets of 20 secs





Picture 2

#### 7. External rotation seated with dumbbell

- Purpose: to improve shoulder strength
- Sit with your right knee bended,
  - lean your right elbow on your right knee, so that your elbow is at shoulder level,
- keep a 90 degrees angle in your elbow (picture 1)
- Pick a dumbbell weight (2kg)
- Rotate your shoulder inwards to a horizontal position, make sure to keep the shoulder low (picture 2)
- Change position, sit with your left knee bended and left elbow resting at the left knee
- 3x10 repetitions each arm
- To intensify the exercise, you can increase the repetitions first, before increasing the dumbbell weight



Picture 1

Picture 2

#### 8. Thumb circle

- Purpose: to increase shoulder and spine mobility
- Starting pose: (picture 1)
  - 1. Lay down on your left side, right hip pointing up (not rolling forward)
  - 2. Your lower leg is extended
  - 3. Your upper leg is flexed in a 90 degrees angle and pressed slightly onto a foamroller/block during the whole exercise
  - 4. Both arms are on the floor pointing forward
  - 5. Your head just rests on the floor
  - 6. Make a fist with your right arm, with your thumb pointing downward
  - 7. Keep your elbow extended during the whole exercise
- Make a circular movement with your right arm, until you reach 180 degrees. Try to keep your right thumb in contact with the floor as long as possible. (picture 2 to 3)
- At 180 degrees, revers the movement from the end position to starting position
- Alternate sides
- Repeat 10 times, each side



Picture 1



Picture 2



Picture 3

#### 9. Scapular push-up

- Purpose: to improve scapular stability, core stability •
- Start in a push-up position
- Keep your arms straight while dropping down the chest. Maintain a straight body and straight arms
- Push your hands into the floor and thereby lift the chest. The arms are still straight
- Fully push your shoulder blades out and forward by pressing the hands into the floor •
- 3x10 repetitions •







Picture 1

Picture 2

Picture 3

#### **10.** Dynamic balance rotational squat

- Purpose: to enhance mobility in the whole chain of movement •
- Pop-up to squat stance
- Rotate to the left (picture 2) and look up with the left arm high
- Rotate to the right (picture 3), left arm down, right arm up
- Perform with a controlled swing, always look at the direction you're going
- Keep an active back leg and control the knee
- 2x10 repetitions







Picture 1

Picture 2

Picture 3