




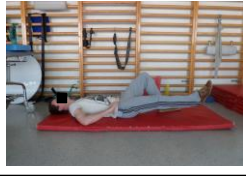
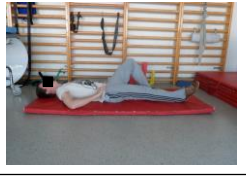





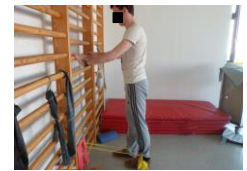
















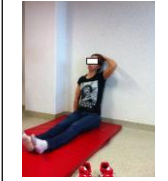
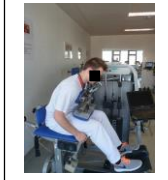

Additional file 1: Performance exercises table 4

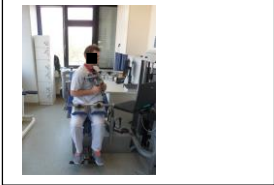
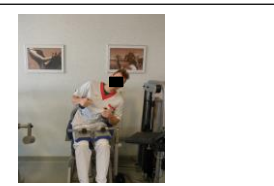
| Exercise | Performance | Visualization |
|---|---|---|
| Abdominal drawing in (ADI) in supine position | Patient lies supine. Knees are flexed with feet supported at hip width. Patient and/or therapist palpate contraction of the m. transversus abdominis. Patient keeps breathing during contraction. |  |
| ADI in sitting position | Patient is seated on a bench. Patient and/or therapist palpate contraction of the m. transversus abdominis. Patient keeps breathing during contraction. |  |
| ADI in sitting position 1 dimensional trunk movements | Patient is seated on a bench. Patient contracts m. transversus abdominis. During contraction patient executes hip flexion followed by hip extension. The lumbar spine stays in a neutral position. |  |
| ADI in high squat position | Patient is standing. Feet are positioned at hip width. Patient contracts m. transversus abdominis. During contraction patient executes a high squat. Knees and hip joints flex 30°. |  |
| ADI in medium squat position | Patient is standing. Feet are positioned at hip width. Patient contracts m. transversus abdominis. During contraction patient executes a medium squat. Knees and hip joints flex 60°. |  |
| ADI in supine position with heel lifts | Patient lies supine. Knees are flexed with feet supported at hip width. Patient contracts m. transversus abdominis. During contraction patient lifts one foot and extends the leg. The lifted foot does not touch the ground during the exercise. Exercise is executed left and right. |  |
| ADI in supine position with heelslide | Patient lies supine. Knees are flexed with feet supported at hip width. Patient contracts m. transversus abdominis. During contraction patient extends one leg. The heel of the extended leg keeps in contact with the ground. Exercise is executed left and right. |  |

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| ADI with superman exercise | <p>Patient is positioned on knees and hands. Patient contracts m. transversus abdominis. During contraction patient extends one leg and the opposite arm. The lumbar spine stays in a neutral position. Exercise is executed left and right.</p> |  |
| ADI with top leg turn out | <p>Patient lies in side position. Elbow is positioned under the head. Both legs are flexed at 90°. Patient should maintain the body position in one line. Patient contracts m. transversus abdominis. During contraction patient executes a 45° abduction and exorotation of the upper leg. Both feet are kept together. Exercise is executed left and right.</p> |  |
| ADI with side bridging | <p>Patient lies in side position. Elbow is flexed 90° and supports the body weight. Both legs are flexed 90°. Patient should maintain the body position in one line. Patient contracts m. transversus abdominis. During contraction patient lifts pelvis from the ground. The body should be positioned in one line during execution. Exercise is executed left and right.</p> |  |
| ADI with back bridging | <p>Patient lies supine. Knees are flexed with feet supported at hip width. Patient contracts m. transversus abdominis. During contraction patient lifts pelvis from the ground. The body should be positioned in one line during execution.</p> |  |
| ADI in sitting position 3 dimension trunk movements | <p>Patient is seated on a bench. Patient contracts m. transversus abdominis. During contraction patient executes 3D flexion and extension movements of the lumbar spine.</p> |  |
| Hip extension | <p>Patient is standing and supports with hands against the wall. Patient contracts m. transversus abdominis. During contraction patient executes a hip extension of one leg. The body position maintains an upright position. The lumbar spine stays in a neutral position. A Thera-band can be used for extra resistance.</p> |  |
| Side-squat | <p>Patient is standing. Feet are positioned at hip width. Patient contracts m. transversus abdominis. During contraction patient moves one leg laterally and executes a side squat movement. Exercise is executed left and right.</p> |  |

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| Reverse lunge | Patient is standing. Feet are positioned at hip width. Patient contracts m. transversus abdominis. During contraction patient moves one leg backwards. Hips are lowered to the floor until front knee forms a 90° angle. Exercise is executed left and right. |  |
| Star excursion exercise | Patient is standing on one leg. Patient contracts m. transversus abdominis. During contraction patient moves the contralateral leg as far as possible in 8 different directions (star form). Exercise is executed left and right. |  |
| Leg-press | Patient is seated. Knees are flexed and at hip width. Patient extends knees and uses both feet to push weight away. |  |
| Leg-extension | Patient is seated. Patient executes a knee extension movement against the resistance. Exercise is executed left and right. |  |
| Calf raise | Patient is standing and supports with hands against the wall bars. Patient raises heels and extends ankles as high as possible. |  |
| Standing abduction | Patient is standing and supports with one hand against the wall bars. Patient executes an abduction movement of one leg. A thera-band is used to adjust the resistance. Exercise is executed left and right. |  |
| Standing adduction | Patient is standing and supports with one hand against the wall bars. Patient executes an adduction movement of one leg. A thera-band is used to adjust the resistance. Exercise is executed left and right. |  |
| Lateral pull down | Patient is seated. Arms are held overhead at full extension, grasping a bar connected to the weight stack. Patient pulls the bar down towards the chest. |  |

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| Low row | <p>Patient is seated.</p> <p>A Thera-band is attached to the wall bars. Patient grasps the Thera-band and initiates the exercise with arms extended. Patient executes shoulder retroflexion and elbow flexion</p> |  |
| Triceps | <p>Patient is seated.</p> <p>A Thera-band is attached to the wall bars. Patient grasps the Thera-band and initiates the exercise with elbows flexed. Patient executes elbow extension.</p> |  |
| Biceps | <p>Patient is seated.</p> <p>A Thera-band is attached to the wall bars. Patient grasps the Thera-band and initiates the exercise with elbows extended. Patient executes elbow flexion.</p> |  |
| Chest press | <p>Patient is seated.</p> <p>A Thera-band is attached to the wall bars. Patient grasps the Thera-band and initiates the exercise with 90° shoulder abduction and 90° elbow flexion. Patient maintains shoulder position and executes an elbow extension.</p> |  |
| Shoulder press | <p>Patient is seated.</p> <p>A Thera-band is attached to the wall bars. Patient grasps the Thera-band and initiates the exercise with 90° shoulder abduction and exorotation. Elbows are 90° flexed and palms of hands are facing forward. Patient extends elbows and hands move upward.</p> |  |
| Fly | <p>Patient is seated.</p> <p>A Thera-band is attached to the wall bars. Patient grasps the Thera-band and initiates the exercise with 90° shoulder abduction and full elbow extension. Patient maintains elbow extension and moves hands towards the middle line.</p> |  |
| Front raise | <p>Patient is seated.</p> <p>A Thera-band is attached to the wall bars. Patient grasps the Thera-band and initiates the exercise with a neutral shoulder position and full elbow extension. Patient maintains elbow extension and performs a 90° shoulder elevation.</p> |  |
| Side raise | <p>Patient is seated.</p> <p>A Thera-band is attached to the wall bars. Patient grasps the Thera-band and initiates the exercise with a neutral shoulder position and full elbow extension. Patient maintains elbow extension and performs a 90° shoulder abduction.</p> |  |

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| Active sit up | Patient lies supine. Knees are flexed with feet supported at hip width. Arms are extended. Patient contracts abdominal muscles and moves upward until both scapulae are lifted from the ground. |  |
| Hamstring stretch | Patient stands with one leg just in front of the other. The back knee is flexed. Patient should bent forward from the hips and sit back into the stretch until stretch is felt. |  |
| Quadriceps stretch | Patient lies in side position. The lower leg is flexed to keep the lumbar spine in a flexed position. Patient grasps ankle of upper leg and executes a knee flexion and hip extension until stretch is felt. |  |
| Adductor stretch | Patient is standing with feet wide apart and extended knees. Patient bends knee to one side and leans towards the same side until stretch is felt. Exercise is executed left and right. |  |
| Latissimus dorsi stretch | Patient is standing with feet wide apart and extended knees. Patient moves one arm above the head and executes a lateroflexion movement away from the elevated arm until stretch is felt. Exercise is executed left and right. |  |
| Trapezius stretch | Patient is seated with both legs extended. Patient sits on one hand to maintain shoulder depression. Patient uses opposite hand to pull the head into a lateroflexion position until stretch is felt. Exercise is executed left and right. |  |
| Tergumed device for lumbar flexion | Patient is seated. The Tergumed device is set to the body proportions of the individual patient. Patient executes a lumbar flexion movement. |  |
| Tergumed device for lumbar extension | Patient is seated. The Tergumed device is set to the body proportions of the individual patient. Patient executes a lumbar extension movement. |  |

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| <p>Tergumed device for lumbar rotation</p> | <p>Patient is seated. The Tergumed device is set to the body proportions of the individual patient. Patient executes a lumbar rotation movement. Exercise is executed left and right.</p> |  |
| <p>Tergumed device for lumbar lateroflexion</p> | <p>Patient is seated. The Tergumed device is set to the body proportions of the individual patient. Patient executes a lumbar lateroflexion movement. Exercise is executed left and right.</p> |  |