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The „German Shoulder Network Protocol“ For Non-Specific And Mild-Specific Shoulder Pain

Aim

- The aim is to introduce an evidence-based physiotherapy protocol for non-specific and mild-specific shoulder pain in Germany, based on 10 years of expertise and experience in the Netherlands.

Background

- In the Netherlands, the cooperation between physicians and physiotherapists has grown within the last 10 years. Local shoulder networks have been founded, coordinated by Schoudernetwerken Nederland (SNN). At the same time, Ruud Schuitemaker and Dick Egmond developed an evidence-based protocol for non-specific and mild-specific shoulder pain, based on the biopsychosocial model. Up until now, they have already educated more than 1000 physiotherapists in the Netherlands and 200 in Germany in 4-day courses (accredited by the Dutch Physiotherapy Association KNGF). All of this has made an important contribution to the quality of the conservative shoulder treatment in the Netherlands[1].
- Physiotherapists in the Shoulder Network Amsterdam treat more shoulder patients, need less and shorter treatments than other (not network-related) physiotherapists and are using the Egmond-Schuitemaker Protocol (= German Shoulder Network (SND) Protocol) in more than 50% of their shoulder treatments[1].

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Methods

German Shoulder Network Protocol

- In general, 4 medical care programs can be distinguished:
  1. trauma → shoulder pain → operation → postoperative rehabilitation → recovery
  2. shoulder pain → operation → postoperative rehabilitation → recovery
  3. shoulder pain → conservative care → no recovery → operation → postoperative rehabilitation → recovery
  4. shoulder pain → conservative care → recovery.
- The German Shoulder Network Protocol covers the third (first part) and the fourth conservative care program.
- Depending on structural and contextual factors, the conservative care program lasts 6–12 weeks[2,3].

German Shoulder Network Protocol: an evidence-based protocol

	Protocol indicator*	Description
Diagnosis	1. Screening	Screening for internal and/or neurological pathology, red flags
	2. Three protocol profiles[4]	Classifying the health problem into protocol profile I, II or III (depending on the course and contextual factors)
	3. NHG diagnostic groups[5]	Classifying the functioning problem into NHG diagnostic group I, II or III
	4. Bucket metaphor[6,7]	Explaining the causes and influencing contextual factors to the patient
Treatment	5. Creating conditions for normal movement using manual techniques	Applying manual techniques to the cervical and/or thoracic spine in case of hypomobility (HVLT manipulation, mobilization)
	6. Exercises based on reduction tests and Circumduction and Deviation movement	Applying exercises based on reduction tests and Circumduction and Deviation Movement (systematically centering the humeral head, scapulothoracic stabilisation),including a video-guided home program
	7. Eccentrics exercises	Applying eccentric exercises to tendons which also systematically stretches and slides connective tissue layers from deep mono-articular to superficial poly-articular, including a video-guided home program
	8. Lawn metaphor[6]	Describing the timeline of biological healing process and influencing factors
Evaluation	9. 24-Hour Rule	Evaluating after 24-hours: no increasing in pain and other (classic) inflammatory reactions are allowed
	10.Assessments	Conducting assessments (at least 2 at the beginning and end of a treatment period)

* as used by Nagelmaeker, to evaluate the Egmond-Schuitemaker protocol within the shoulder network Amsterdam[1]

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Methods – Diagnosis (1): Screening

1. Screening for internal (cardiovascular, respiratory, gastroenteric) and/or neurologic (radicular, central, peripheral nervous system) pathology as well as red flags (post-traumatic situations)
2. If red flags are present, there is no indication for the SND protocol (conservative care program 3/4)

Methods – Diagnosis (2): 3 protocol profiles[4]

1. Protocol profile I: normal course
   - protocol lasts for maximally 6 weeks
   - treatment once a week
   - daily exercise
2. Protocol profile II: deviating course without dominating yellow flags
   - protocol lasts at least 12 weeks
   - treatment twice a week (1-6) and once a week (7-12)
   - daily exercise (including cardiovascular), sleep hygiene
3. Protocol profile III: deviating course with dominating yellow flags
   - protocol lasts at least 12 weeks
   - treatment twice a week (1-6) and once a week (7-12)
   - daily exercise (including cardiovascular), sleep hygiene, stress management, pain education

Methods – Diagnosis (3): NHG** diagnostic[5] groups

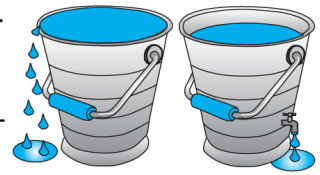
1. NHG diagnostic group I
   - active range of motion (AROM) and passive range of motion (PROM) is decreased (abduction or external rotation)
   - e.g. stiff shoulder (Frozen Shoulder, glenohumeral osteoarthritis)
2. NHG diagnostic group II
   - painful arc during arm elevation
   - e.g. weak shoulder (functional impingement, SLAP I or II)
3. NHG diagnostic group III
   - neither decrease of AROM and PROM nor painful arc
   - wobbly shoulder (instability: e.g. AMBRII)

** NHG Nederlands Huisartsen Genootschap (Dutch Society of General Practioners)

Methods – Diagnosis (4): Bucket metaphor[6,7]

1. Analyse the factors that can influence the natural course[8]
   - personal/external factors:
     - systemic factors (e.g. diabetes mellitus, thyroid disease, rheumatism, smoking, drinking, using drugs)
     - stress (stress without control, allostatic load)
     - inadequate behaviour (too much, little or inappropriate movement)
     - dispositions ((reversible) mechanical dysfunction within the kinetic chain)
     - mechanical obstruction of the circulation

2. Bucket metaphor
   - cumulative factor analyses
   - multifactorial determined causes



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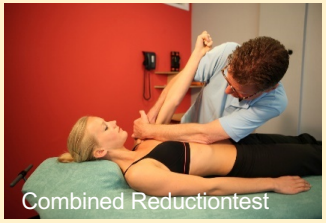
Methods – Treatment (5): Creating conditions for normal movement using manual techniques

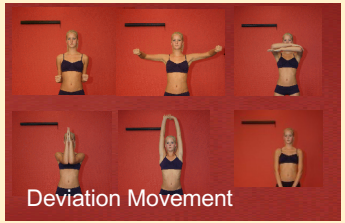
1. Protocol profile I: normal course
   - biomechanical influence on the kinetic chain by mobilization of the cervicothoracic spine, AC joint and HSMI***
2. Protocol profile II/III: deviating course with/without dominating yellow flags
   - biomechanical influence on the kinetic chain by mobilization of the cervicothoracic spine, AC joint and HSMI***
   - neurophysiological influence of the orthosympathic chain by mobilization of the preganglionic centres (Th4-5-6-7) of the shoulder

*** HSMI = HumeroScapular Motion Interface (glenohumeral system, including the subacromial and bicipital system, nerves, fascia and skin)

Methods – Treatment (6): Exercises based on reduction tests[12], Circumduction and Deviation Movement[6]

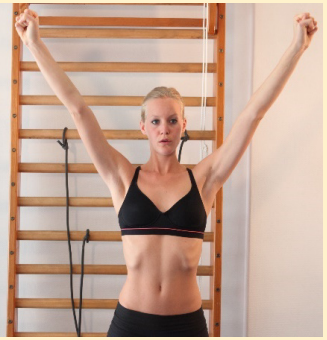

Combined Reductiontest


Circumduction Movement


Deviation Movement

Methods – Treatment (7): Eccentric exercises

- By **eccentrically** exercising the rotator cuff, the deep mono-articular, middle oligo-articular and superficial poly-articular connective tissue layers stretch and slide among each other.
- A video-guided home program is available for free at: http://www.funktionelle-uebungen.de.



Methods – Treatment (8): Lawn metaphor

- Comparing the (neglected) lawn with (painful, degenerated) connective tissue helps to understand that sufficient time is needed for a biological healing process. And: what are the influencing factors?
- Applying the Common Sense Model[9]
  - What do I have?
  - What's the cause?
  - How long will it last?
  - What can I do myself?
  - What are the consequences?

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Methods – Evaluation (9) 24-Hour Rule

Evaluate possible inflammatory signs 24 hours after trauma, treatment, exercise or training.

1 24-hour rule is negative if:
- clinical (neurogenic) inflammatory signs are not seen (felt) or
- these reactions last for 24 hours, but are then diminishing slowly.

Conclusion when 24-hour rule is negative:
- structural damage is minimal
- biological recovery is possible (potentially)
- good prognosis for conservative care program
- load during trauma, treatment, exercise or training was acceptable
- patient is (co)-responsible for recovery.

2 24-hour rule is positive if:
- clinical (classic) inflammatory signs (rubor, calor, tumor, dolor, functio laesa) are increasing after 24 hours.

Conclusion when on 24-hour rule is positive:
- structural intra-articular (re)damage is possibly (probably) present
- structural extra-articular (re)damage is possibly present
- load should be adapted
- biological recovery can be possible (if the next 24-hour evaluations are negative)
- fair prognosis for conservative care-program (after adjusting the load)
- patient is (co)-responsible for recovery.

Conclusion when 24-hour rule is repetitively (at least 3x) positive:
- orthopaedic or surgical expertise should be considered.

Methods – Evaluation (10): Assessments

Apply questionnaires (PROM's)[9] and assessments depending on the protocol profile and NHG-diagnostic group[5].

	protocol profile I	protocol profile II	protocol profile III
NHG-diagnostic group I	PSB, SPADI, DASH, SRQ	PSB, SPADI, DASH, SRQ	PSB, BIPQ, CSI SPADI, SRQ
NHG-diagnostic group II	PSB, SPADI, WORC	PSB, SPADI, WORC	PSB, BIPQ, CSI, WORC, SPADI
NHG-diagnostic group III	PSB, SPADI, WOSI, CMS	PSB, SPADI, WOSI, CMS	PSB, BIPQ, CSI, WOSI, CMS

Conduct Assessments (marked by ▮) in the beginning and end of each period.

care program 4: with protocol profile I

care program 4: with protocol profile II/III

care program 4: prolonged protocol profile II/III changes into care string 3: preoperative

care program 1/2: trauma/shoulder pain → operation → postoperative rehab protocols[10]

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Consider

- Shoulder network physiotherapists treat shoulder patients in a more effective and adequate way than other physiotherapists[1].
- In Germany, surgeons and physiotherapists have difficulties to implement the shoulder protocol in their daily practice because of the different levels in education as well as the lack of a meaningful accreditation system, health plan support and possibility to refer (shoulder) patients.
- In Germany, it is not yet common daily practice to use scientific outcome measurement tools or to evaluate physiotherapeutic outcome.

Conclusions

- There is a strong need for implementing available physiotherapy quality standards into the German health care system as soon as possible.
- Every physiotherapist in Germany should use an electronic documentation system to sustain this available quality which should be monitored in an accreditation system.
- An electronic documentation system enables physiotherapists to measure the outcome of their (shoulder) protocols[9]. Databases are filled to facilitate scientific research: a shoulder registration system – including a unified physiotherapeutic coding system – should be spread among Europe.
- The 4 care programs should be implemented[13,14] in (electronic) protocols supported by the participating organisations (e.g. SECEC-ESSSE, DVSE, EUSSER, SND).
- in Germany, however, it's difficult to roll out the described protocols. The German "blanco" prescription could fill this gap.
- The German Shoulder Network should have a contract with the health insurances based on "integrated care" (§140) to help to realize the goals of SND.

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