Facilitation of Learning (FoL) – ENPHE
Good Practice for Physiotherapy Education

1. Title of the Good Practice + Author(s) + e-mail:

TRANSFER: a learner-informed framework for teaching evidence-based clinical reasoning in physiotherapy education

Matthias Eggermont, Rehabilitation Research Group, Faculty of Physical Education and Physiotherapy, Vrije Universiteit Brussel (VUB), Belgium | matthias.eggermont@vub.be

2. Background & Rationale:

Clinical reasoning (CR) is a core competence in physiotherapy, but students often find it difficult to integrate clinical information, evidence, uncertainty and reflection into coherent decisions. TRANSFER (TRAiNing Skills For Evidence-based practice and clinical Reasoning) was developed to make this reasoning process explicit and trainable. It structures both diagnostic and management reasoning and invites students to pause at key decision points, justify choices and reconsider their reasoning.

TRANSFER builds on structured clinical reasoning and reflection, evidence-based practice, probabilistic/Bayesian reasoning, dual-process theory and metacognitive reflection. Its learning design combines THINK-PAIR-SHARE, team-based learning, simulation and feedback. Students first reason within a structured case, then compare reasoning with peers, and finally discuss differences and uncertainty. The framework has been iteratively refined through student feedback over three academic years.

I categorise my case under the following theme (please tick the appropriate box):

X Clinical reasoning skills
X Learning between students
X Simulation-based learning
☐ Lack of motivation
☐ Tailored learning for student diversity
☐ Facilitation of online physiotherapy
☐ Self-regulation in physiotherapy learning (professional issues)
X Blended learning strategies
☐ Other: .....

3. Learning Objectives:

After participating in TRANSFER, students are expected to:

- structure and explain their clinical reasoning process step by step;
- formulate, update and justify diagnostic and management decisions using clinical information and evidence;
- use probabilistic reasoning to deal with uncertainty rather than search for one single correct answer;
- critically reflect on their own reasoning, assumptions and possible biases;
- compare alternative reasoning pathways and learn from peer perspectives;
- integrate relevant research evidence into clinical decisions;
- develop habits that support critical thinking and lifelong learning.

4. Implementation & Description of the Good Practice:

TRANSFER is currently embedded across the five-year physiotherapy curriculum at VUB with level-appropriate complexity. The full framework is used in the first master year within a Healthy Ageing course (approximately 1 ECTS) around a complex geriatric patient case. Simpler cases or selected components can be used earlier in the curriculum.

Typical learning sequence:

1. Case introduction/simulation: students encounter a patient case and obtain clinical information, including through simulated interactions.
2. THINK: small groups work through structured questions and key decision points. They generate hypotheses, select further information/tests and justify decisions using evidence.
3. PAIR: groups compare their reasoning with another group. The purpose is not to merge answers into one 'correct' solution, but to discuss differences, alternatives and uncertainty and to improve their own reasoning.
4. Instructor facilitation: teachers provide just-in-time support, probing questions and feedback without prescribing a single expert solution.
5. SHARE: reasoning approaches and learning points are discussed across groups. Based on student feedback, this phase increasingly focuses on comparison and discussion rather than repetitive presentations.
6. Reflection and assessment: structured reflection and peer feedback make the reasoning process visible and encourage students to reconsider decisions.

Resources include authentic patient cases, a structured TRANSFER worksheet with reflective prompts, supporting teaching on statistics/diagnostic accuracy, literature searching and evidence appraisal, scheduled group sessions, peer assessment and instructor facilitation.

The approach can be delivered in a blended format and has also been used with international student collaboration.

5. Evaluation & Feedback:

Feedback is predominantly formative and embedded throughout the learning process. Students receive feedback through peer dialogue during PAIR activities, whole-group discussion during SHARE activities, peer assessment and timely instructor guidance. A key principle is that feedback should stimulate further reasoning rather than provide a model 'correct answer', because several defensible diagnostic or management choices may exist.

The assignment may also contribute to summative assessment, but the educational value lies mainly in making reasoning explicit and discussable. Student feedback showed that peer assessment supported accountability, although some students were uncomfortable assigning points to peers. This led to shorter/simplified peer-assessment procedures and an emphasis on qualitative dialogue and instructor feedback.

6. Challenges & Solutions:

- Challenge 1 - gaps in prior knowledge, especially statistics and evidence appraisal. Response: provide refresher/support materials, including focused modules or screencasts, and align course sequencing so foundational content precedes the task.
- Challenge 2 - workload and planning. Response: use fixed deadlines and scheduled class time, reduce redundant reflection questions and focus each activity on its CR purpose.
- Challenge 3 - repetitive SHARE sessions. Response: compare reasoning pathways, use greater case variety and facilitate discussion instead of repeating complete case presentations.
- Challenge 4 - desire for more teacher feedback. Response: provide timely, just-in-time facilitation while deliberately avoiding a single 'expert' solution that students may copy.
- Challenge 5 - international collaboration. Response: align goals, expectations and assessment between institutions, tailor support to curricular differences and schedule joint activities within timetables.

Effectiveness has so far been evaluated mainly through student perceptions in an iterative quality-improvement process. Across three academic years, focus groups and mixed-method Start-Stop-Continue surveys informed adaptations. In the two evaluation cohorts, students rated perceived progression in CR insight, evidence-based decision-making and reflection at approximately 70/100; THINK and PAIR were consistently rated positively (median 4/5), while SHARE was more neutral (median 3/5). These are self-reported outcomes, so objective and longitudinal assessment of CR remains an important next step.

7. Impact & Sustainability

TRANSFER is intended as a flexible framework rather than a stand-alone course. Core components, structured reasoning, reflection at decision points, evidence use, peer dialogue and feedback, can be embedded in existing courses and adapted to different clinical domains and levels of complexity. At VUB, elements are already integrated across all five years of the physiotherapy curriculum.

Its sustainability is supported by reusable cases and worksheets, scalable small-group learning, and an iterative learner-informed improvement cycle. Potential scale-up includes use across other healthcare programmes and international settings, provided that learning outcomes, prior knowledge, assessment and expectations are aligned locally. Future development will include stronger objective/longitudinal evaluation and exploration of how AI-supported tools can be used critically within CR education.

8. References & Supporting Materials:

Core manuscript: Eggermont M, Hoeben L, Smeets L, Adriaenssens N, Swinnen E, Beckwee D. An iterative, learner-informed framework for teaching clinical reasoning in healthcare education: a mixed-methods study. Manuscript under review.

Key supporting literature:

- Atkinson HL, Nixon-Cave K. Phys Ther. 2011;91(3):416-430. Clinical reasoning and reflection tool using the ICF framework and patient management model.
- Cook DA, Sherbino J, Durning SJ. JAMA. 2018;319(22):2267-2268. Management reasoning beyond diagnosis.
- Hege I, et al. Diagnosis (Berl). 2023;10(3):218-224. European longitudinal and interprofessional curriculum for clinical reasoning.
- Monteiro S, et al. Med Educ. 2020;54(1):66-73. Critical thinking, biases and dual processing.
- Guenther AR, Abbott CM. PRiMER. 2024;8:7. Think-Pair-Share for participation and in-depth discussion.

Supporting materials available with the manuscript include: (1) overview of the TRANSFER framework, (2) overview of the iterative development process, (3) focus-group interview guide, (4) student surveys, and (5) qualitative thematic-analysis overview.

If you have any questions about the template, please email: Matthias.eggermont@vub.be

Thank you in advance for completing the template and for your valuable input.

Niki Stolwijk, Anke van Erp, Livia Hoeben en Matthias Eggermont