

Title: The epistemological value of physics in medical rescue education and practice: toward a transformative emergency medical rescue curriculum .

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Background/Context: Physics is fundamental to most natural sciences. The rationale behind the medical-rescue content of the Bachelor of Emergency Medical Care qualification is poorly defined. Medical-rescue education in South Africa would benefit from contribution to its horizontal and vertical discourse and inform the academic level description and NQF alignment.

Aim/Purpose: The aim is to document the principles of physics implicit in the medical-rescue curriculum, its implementation and in its practice. Conceptual/theoretical physics is critically appraised for alignment or misalignment in the medical-rescue curriculum. Finally, recommendations of specific theories/principles of physics that may have implications and applications for medical-rescue education and practice will be made.

Methods: Multiple qualitative approaches are employed. Document analysis is used to appraise linkages between physics and rescue inherent in the curricula. The Delphi technique is employed to reach expert consensus on the typology of rescue scenarios. Using process tracing, the practical components of medical-rescue will be deconstructed for underpinnings of physics principles. A criterion-referenced gap analysis will enable understanding of what principles and theories of physics are missing, desirable and fundamental to the goal of medical-rescue paedagogy and practice.

63 Results and discussion: There are no texts on medical-rescue that address principles of physics and their application. This study informs evidence-informed rescue training and efficient rescue practice. Theories and „models of competence“ and „acting in context“ have relevance for knowledge integration of conceptual physics and medical-rescue. This study problematises current medicalrescue curricula, critically analyses the conceptual physics upon which medical-rescue practice is predicated and provides a transformative approach to curriculum review.

Conclusion /Take home message: Critical reflection and inquiry into medical rescue practice is central to its professional growth. Impediments to learning include knowledge deficiencies and fragmentation, irreconcilable ontologies and paedagogic malpractice. Curricula transformation is preceded and proceeded by interrogating explanatory deficiencies and foundational prerequisite knowledge