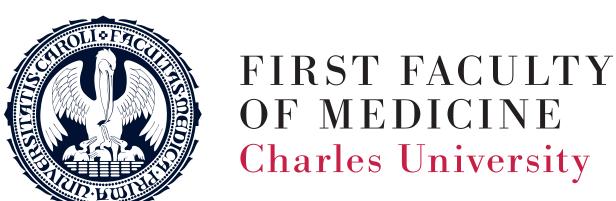
Explanatory models of human physiology to teach pathophysiology of diabetic ketoacidosis with simulators









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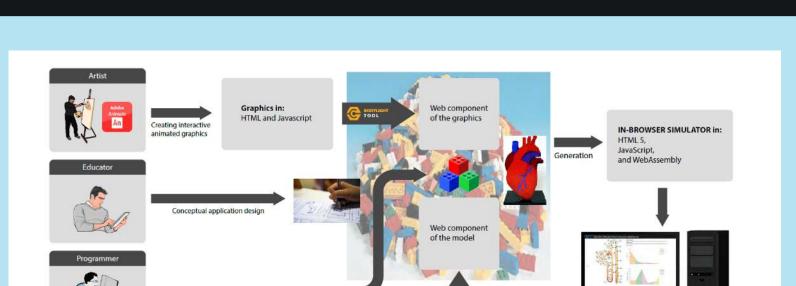
1. Model Blood-gas exchange Hemodynamics of cardiovascular system Respiration Modelica www.modelica.org Physiolibrary www.physiolibrary.org

2. Enabling technology

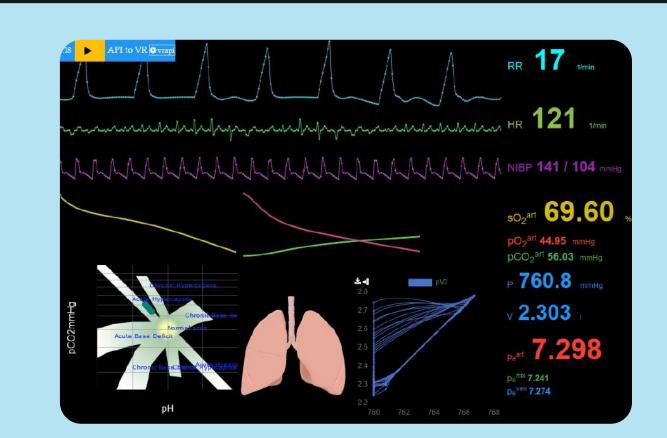
bodylight.physiome.cz



- 1. model (standard Modelica language)
- 2. simulation (standard Functional Mockup Interface Unit FMI)
- 3. web components and HTML element (to control and visualise inputs and outputs)



Co-simulation of multiple models



3. Educational scenario

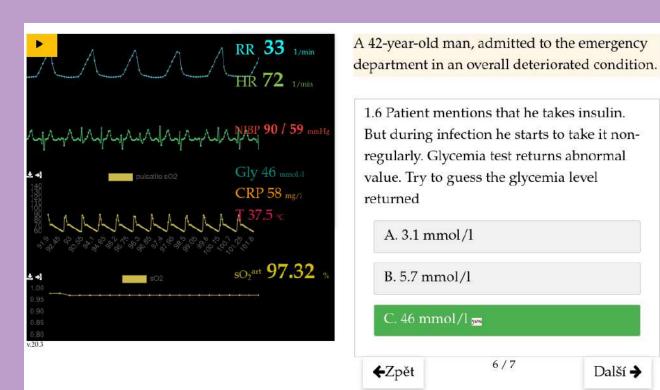
Customized web with simulators and interactive items

static web: Markdown, HTML, web components,

optional dynamic session control on number of answered questions and selected options (firebase realtime database)







egolem.online/dka

4. Lecture Medical Simulators: revolution in medical education

90 minute lecture time

briefing

simulation game

debriefing

simulation powered problem solving

debriefing

simulation powered diagnostic reasoning debriefing















Conclusion

- Bodylight.js enables the creation of platform-independent web simulators, which are used for problem-based learning and team-based learning.
- A case report of a patient with diabetic ketoacidosis was utilized for diagnostic reasoning.
- Students greatly appreciated the interactive learning experience by engaging in hands-on activities and discussing their opinions during debriefing.

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