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Betreff: lecture Friday the 6th of october from 14.45 to 16.00, duration 3 minutes: a new rescue lifting system to prevent sudden death after cold water immersion versus single-sling technique

For the last decades there have been studies on the subject of sudden death after cold water immersion. Growing knowledge about after drop, stress, pain and shock cannot influence scientists' urgent demands of a gentle, horizontal rescue of cold water victims. In yacht-sports as well as professional air-rescue there has been hardly any alternative to the inconvenient single-sling technique like the „Lifesling“, which only allows vertical rescue. „Lifesling“ is a floating harness attached to a line secured to the boat. It is thrown out when approaching the person in water. The victim can then be pulled on board by attaching the line to a halyard and winching the person up. A very similar device is used in helicopter rescue. The „Lifesling“ technique does not enable rescue of the patient in a supine position as suggested. Orthostatic stress may induce huge cardiovascular responses, especially in severely stressed subjects precipitated by adrenal and corticosuprarenal hyperactivity. These mechanisms play an important role in rescue from immersion in water because the patient changes from a more or less supine swimming to an upright position hanging in the sling. Furthermore, winching up the patient in the sling induces discomfort or even pain leading to cardiovascular stress, too.

It is the aim to present the evaluation of a new double-sling system („Rescue Lifting System“-RLS, developed by M. Schwindt) enabling rescue from water in a supine position compared to the conventional single sling system.

The tests were assisted by the fire fighters of Hannover and Kiel. The Medical School of Hannover focussed on the parameters heart rate, blood pressure, respiration-restrictions, pain-perception and subjective well-being.

The results indicate that the single-sling system causes a strong increase of heart rate through massive stress influenced by restricted breathing, orthostatic hypotension and pain (see the red curve). The RLS on the other hand made the participants relax (see the blue curve). Significant is the difference of heart rate alteration between RLS and „Lifesling“(p=0.001).

Since extensive cardiovascular stress should be avoided in patients rescued from immersion in cold water we believe that rescue with double-sling systems like RLS might be favourable and help to prevent sudden deaths. There are two reasons for this hypothesis: On the one hand RLS avoids orthostatic stress, on the other hand it reduces pain and discomfort during rescue. In summery we believe that RLS offers a way to accomplish gentle rescue of patients from immersion in cold water. New systems for SAR helicopters enabling rescue in a supine position should be developed. Nevertheless, further studies are necessary to evaluate if the RLS may prevent fatal incidents after rescue from cold water in practice. However, our study supports the assumption of advantageous effects of double-sling systems.