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Preventing Acute Injuries and Promoting Safety among Finnish Surfers

Henna Hytönen

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Abstract

The aim of the thesis was to promote the health of Finnish surfers and to prevent acute injuries by organizing an event with lectures and functional first aid and life-saving training for the surfers. The goal is to promote safety by training Finnish surfers and peers to act in life-threatening situations and in preventing chronic and acute injuries by presenting the most common injury types of the sport. The thesis also aimed respond to the needs of the assignor, the Association of Finnish Surfing, to provide information on acute injuries for Finnish surfers and describe how to act safely in first aid, life-saving and acute situations. Another aim was to show ways to promote the surfers' health and to determine the most common accidents in surfing.

The theoretical basis of the thesis relied on international research on surfing related accidents, illnesses and first-aid recommendations. The information was collected to meet the needs of the Finnish surfers. The relevant subjects of the study are the surfer's ear; Exostosis, the surfer's eye; ultraviolet rays and Pterygium, lumbar and myelopathy, tropical accidents and paramedics, hypothermia, drowning and resuscitation, as well as a drowning life-saving using the surfboard.

The feedback from the event gave grounds for assessing the usefulness of the thesis for Finnish surfers with regard to health promotion and accident prevention. In conclusion, it can be stated that the functional event was informative and inspirational and that it served the surfers because of the practical training and the usefulness of the lectures. The theory of life-saving and its usefulness without previous first aid training were also found challenging. Based on the results, it can also be stated that the need to promote the health of surfers, decrease accidents and improve first aid and life-saving skills will grow along with the growth of the sport in the future.

Keywords/tags (subjects)

Surfing, First-aid, Health promotion

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Tiivistelmä

Työn tavoitteena on edistää suomalaisten lainelautailijoiden terveyttä ja ehkäistä akuutteja loukkaantumisia pitäen toiminnallisen luento, ensiapu- ja hengenpelastuskoulutuspäivän surffareille. Tavoitteena on edistää suomalaisten surffareiden turvallisuutta kouluttamalla surffaajia toimimaan hengenvaarallisissa tilanteissa sekä ehkäisemällä kroonisia ja akuutteja vammoja esittelemällä urheilun yleisimmät tapaturmatyypit. Tavoitteena on myös vastata toimeksiantajan, Suomen Lainelautaliiton, tarpeeseen tuottaa suomalaisille lainelautailijoille tietoa akuuteista loukkaantumisista sekä kertoa, kuinka toimia lajin yleisimmissä ensiapu, hengenpelastus ja akuuteissa tilanteissa turvallisesti. Tarkoituksena on lisäksi näyttää tietä lajin terveyden edistämisestä sekä määrittää lajin yleisimmät tapaturmat.

Teoreettinen pohja aiheeseen liittyvistä tapaturmista, sairauksista ja ensiapuohjeistuksista on kartoitettu kansainvälisten tutkimusten pohjalta. Tieto kerättiin vastaamaan suomalaisten lainelautailijoiden tarpeita. Olennaisiksi aiheiksi nousivat tutkimuksen perusteella surffaajan korva; Eksostoosi luunkasvama, surffaajan silmä; ultraviolettisäteily ja Pterygium, ristiselkä ja Myelopatia, trooppiset tapaturmat ja ensihoito, hypotermia, hukkuminen ja elvytys sekä hukkuvan hengenpelastus lainelautaa käyttäen.

Palautteesta saaduista tuloksista on johtopäätelty työn hyödynnettävyys lainelautailijoille terveyden edistämisessä ja tapaturmien ehkäisyssä. Johtopäätöksenä on todettu työn toiminnallisen tapahtuman informatiiviseksi ja inspiroivaksi, joka palvelee lainelautailijoita käytännöllisten toteutuksen ja luennoiden hyödyllisyyden vuoksi. Myös hengenpelastuksen teoreettinen osa ja sen hyödyllisyys ilman aikaisempaa ensi-apu koulutusta koettiin haastavaksi. Johtopäätöksistä saaduista tiedoista tarve lainelautailijoiden terveyden edistämiselle ja tapaturmien, ensi-apu taitojen ja hengenpelastuksen lisäämiselle on suuri lajin lisääntyessä.

Avainsanat (asiasanat)

Lainelautailu, Ensiapu, Terveyden edistäminen

Muut tiedot

Contents

1 Introduction

Surfing, the new Olympic sport 2020, (The Tokyo Organising Committee of the Olympic and Paralympic Games), has become more popular in Finland and expanding growth could led to danger the uneducated surfers and increase the amount of the surfers in operative and acute departments. According to the researches, is discovered that Surfers are exposed to acute injuries as well as chronic diseases due to environmental, equipment or physiological aspects of the sport (Nathanson, Haynes & Galanis, 2002; Furnes, Hing, Abbott, Walsh, Sheppard & Climstein, 2014, 7).

Sprains, lacerations, strains, and fractures are common. Injury mechanism is usually from the rider's own surfboard, sea floor or sea animal induced. (Nathanson et al. 2002.) Coral wound infections, sea animal stings, UV-light damage and auditory problems such as exostoses are common incidents of the sport in the tropics (The World Conference on Surfing Medicine, 2017). Typical chronical injuries are ankle, head, face and lower back injuries. Lower back pain and chronic back injuries could develop from the physiological hyperextension of the back when paddling in a prone position (Furnes et al. 2014, 7). Other related surfing injuries are water related incidents. Cold water hypothermia and drowning are deadly acute situations, but more important the prevention, the first-aid resuscitation, safety and action can be practiced (The World Conference on Surfing Medicine, 2018).

Promoting prevention of the surfing related illnesses and acute injuries has not been studied in Finland according to Theseus (the repository of the theses and publications of the Universities of Applied Sciences), and surf-related first-aid has not been organized in the Finnish surfing community which made it topical subject to research. Other sport related first-aid manual thesis’s has been made by nursing students according to Google Scholar (akuutit vammat theseus, 2018). International searches and projects has been made, but research results are not directly at disposal to Finnish surfers due to different recommendations and environmental

factors. In turn, surfers in Finland are known for traveling to abroad to gain more waves which made the environmental risks of acute injuries international. A brief questionnaire for surfers that I know before thesis research plan shows that most of the Finnish Surfers lack the knowledge of the surf related illnesses and prevention and thus the educational first aid and development project is needed.

Contents of the project were elected by interest of the Association of Finnish Surfing and by answering to the thesis questions. The available international material of Surfing related acute injuries, researches and the first-aid were filter to respond the hazards that may occur to Finnish surfers. First-aid recommendations are based on the EU and international evidence based guidelines and instructions. All surf related injuries and preventions were not able to go through because of the limited timetable of the event and resources, so the subjects were reduced by necessity, interest and statistics.

The aim of the thesis was to promote the health of Finnish surfers and to prevent acute injuries by organizing an event with lectures and functional first aid and life-saving training for the surfers. The goal is to promote safety by training Finnish surfers and peers to act in life-threatening situations and in preventing chronic and acute injuries by presenting the most common injury types of the sport.

2 Surfing, Health and Injuries

2.1 Nursing and Health Promotion

The health care professionals aim is to maintain and promote health, prevent illnesses, and improve illnesses and alleviating suffering (Act on Health Care

Professionals 559/1994). Nursing health promotion in individuals, groups and community has been shown to be significant part of the prevention work (Kemppainen, Tossavainen & Turunen, 2012). Health promotion definition, by the Finnish Health Care Act (1326/2010), means actions towards individuals and different communities to maintaining and improve health, influence populations, prevent illnesses and accident injuries and other health problems. According to Kemppainen, Tossavainen and Turunen (2012), nurses can promote health either general, patient-focused or project management way. The empowerment related to collaboration with individuals, groups and communities was the second common defining concept of the health promotion (Kemppainen et al. 2012). The nurses must have a wide knowledge of the factors that are affecting to the health of the individuals, groups and communities and skills to strengthen their resources (Eriksson, Korhonen, Merasto, Moisio 2015).

Finnish Ministry of Social Affairs and Health (Terveyden edistäminen), describes health promotion as part of the public health and highlights accidents to be special problem in public health. Accident preventive work progress path should implement by identifying the dangers and risk groups, information seeking and sharing, changing the actions and modify the methods, collaborate and report accidents (National Institute for Health and Welfare, 2018).

2.2 Injuries Statistics

Because there was no statistics of how many Finnish surfers has been injured, sport injuries are presented to describe the sport related accidents in Finland. In Finland 2017, reported sports accidents that caused physical injuries happened 420 000 (aged 20-74), covering 27% of all accidents. Therefor sports accidents where the second most common accidents. 42 % happened to women and 58 % to male. The most common sport types which caused injuries where jogging, walking, jumping and stick walking, which caused 16% of all sport accidents. Skiing, downhill skiing and snowboarding were covering 6% of the sport accidents and unknown sport types

18%. 93% of the sport accidents happened in free time. Collision with another person or object or performance error happened 29% in all sport accidents. The major part of the sport injuries was sprains, strains, dislocations or muscular injuries 62%, fractures 8% and one of fifth were bruises or wounds. Injuries that needed medical attendance were one of four injuries and 10% utilized the services of the health or nursing staff. (Haikonen, Doupi, Honkala, Nipuli, October & Lounamaa, 2017, 19-21.)

Reducing accidents has been set as a common goal in the Internal Security Programs (2004, 2008, 2012), in the European Union (EU) and World Health Organization (WHO) and Finnish Ministry of Social Affairs and Health has made a proposal for a plan for home and leisure accident prevention for the period 2014-2020 (Koti- ja vapaa-ajan tapaturmien ehkäisyn tavoiteohjelma vuosille 2014 – 2020) (Sosiaali- ja terveysministeriö, 2013).

2.3 Acute and Chronic Surfing Injuries

Survey collection of surfing injuries (year 1998-1999) from 1348 people reported 1237 acute injuries and 477 chronic injuries. The acute injuries divided 42% lacerations, 13% contusions, 12% sprains and strains, 8% fractures. Head and neck injuries covered 37% and lower extremities 37% of the injuries. Causes of the injuries were board related injuries 67%, were from own board 82% and other surfers board 18%. Sea floor injuries caused 17% of the injuries. According to the research, injuries were also caused by marine animals 3%, 7% by wave and unknown types were 6%. (Nathanson et al. 2002.)

Same like researches and surveys had been made internationally and the conclusions and responses had been similar to earlier survey. Surfing in cold or artic water has not affected to the injuries type clearly, although more contusions and hypothermia were reported and less lacerations in the research (Ulkestad 2013). The risk for injuries when surfing in big waves was 2.4 times higher than surfing in small waves

and 2.6 times higher when surfing over the sea floor that has rock or reef bottom than sand bottom (Andrew, Shark, Leland & Kelly, 2007).

One study of the chronic injuries revealed that the competitive surfers, have more risks for chronic injuries to ankle, head and face and lower back injuries. Back injuries were associated with prolonged paddling. They speculated also that the back injuries could form because of the physiological differences like more aggressive turnings and difficult trainings in competitive surfers, while head and face injuries related to the surfed hours leading to increased environmental exposure causing ear exostosis and eye problems in competitive surfers. The study revealed also that competitive surfers who perform aerial maneuvers, had clearly more chronic injuries 36.5%, than surfers who didn't do the aerials 28.9%. Surfer's age increase was related to prolonger chronic injury. Back pain and injuries were related to the surfers paddle prone position, for example laying on the board in hyperextension position. Paddling in this position helps the board to move forward lifting the nose of the board from the water. This position gives space to the arms to paddle and faces the surfer to the right direction. If this extension is not from thoracic and cervical spine, the lumbar spine extension increases and later be injured. (Furnes et al. 2014, 7.)

The most common cause of surfing death is drowning by 53%. Secondary common cause by 15% is shark-attack following by head injury 13%. Lightning causes death 10%, heart attack 7% and laceration 2%. Also there was mentioned 4 cases of tethered by leash and 4 seizures. (Nathanson, Surfing injuries.)

2.4 Lectures and First-Aid Program

According to the statistics, surfing related injuries are divided into acute injuries and chronic injuries. Promoting safety to the surfers and preventing injuries, the lectures for the Finnish surfers were concentrate to the injuries that are mentioned earlier. Chronic diseases, eye, ear, spine and lumbar disc injuries were presented in the

lectures. Acute, deathly injuries like hypothermia, drowning and board related injuries (head and spine injuries) were discussed shortly in the event lectures, but were more highlighted in preventive simulation first-aid and life-saving workshop. Other acute injuries in tropics such as sea animal bites and reef cuts were also presented in the lectures.

The event lectures and life-saving workshop was in Finnish for the Finnish audience and the lecture material terminology was intent to the Finnish surfer audience. The terminology of the surfing are based often to English language and the Finnish parallels do not exist in many cases. Some terms are explained next. Reili (rail): sides of the surfboard. Nose: top tip of the surfboard. Tail: back end of the surfboard. Leash: security rope which is attached to the leg.

3 Objective(s)

The topic of the thesis is chosen for interest to develop awareness of the first-aid and prevention of acute illnesses and injuries among Finnish surfers. The goal is to promote safety by training Finnish surfers and peers to act in life-threatening situations and in preventing acute injuries by presenting the most common injury types of the sport. The development thesis is put into effect, in form of First-aid and safety course.

A partner representing working life is Suomen Lainelautaliitto (Association of Finnish Surfing). Association of Finnish Surfing is the official organization of Surfing in Finland. The association represents the pursuit of surfing and the activities that contribute to it. Association of Finnish Surfing organizes Finnish Surfing Championship among others. The thesis is made to answer the needs of the cooperative partner Association of Finnish Surfing to organize a lifesaving training and educative lectures for Finnish surfers and other peers. The event of the lectures and lifesaving training was held on 7.10.2018, Helsinki Surf shop, Helsinki.

The research of the project should answer to the questions: How to educate surfers? How to promote safety in surfing? What first-aid skills is needed in surfing? The main goal was to implement an event which will educate surfers to prevent surfing injuries and how to operate in acute situations. The project and the event itself should answer to the needs of the Association of Finnish Surfing to promote safety and knowledge of the surfers. The evaluation of the project was formed by the verbal feedback of the participants after the event lectures and life-saving training.

The thesis clarify the surfing related health risks and give direction to health development in this area and how to carry it out informative and educational. Results of the event were positive feedback of the project and surfers increased knowledge of the lifesaving and acute illnesses prevention. Other interested can use the research also to develop the knowledge and hopefully the peers of the event can perform better in the acute situations as planned.

4 Methods

Functional thesis gives results and suggestions for working life partner and works as development assignment. The student shows the ability to present improvement to the field of profession, to student itself and for the working community as well as co-operation and communication skills. One of the mayor parts is that the student's independent work, developmental, critical and investigative work is presented in the thesis. Functional thesis is often related to research or development project which serve the cooperative organization or working life partner. (Tuomi & Latvala, 2018.)

Information concept of the assignment was created from the sources that validated the preventive surf injuries and promoted the health. The first-aid was based on the

International first aid and resuscitation guidelines 2016, European Resuscitation Council Guidelines for Resuscitation and Finnish Käypä hoito recommendations. Also book Drowning: Prevention, Rescue, treatment (Joost J.L.M Bierens) was used to give specific information about the first-aid and resuscitation in drowning victims. Statistics of the accidents in Finland were based on the Suomalaiset tapaturmien uhreina 2017 research. Because of the lack of the statistics of surfing accidents in Finland, international statistics were used.

The major sources were searched from Cinahl Plus Full text (Ebsco), Pubmed, Science direct, Terveysportti and using Google Scholar. Search words were Injuries AND first aid AND surfing, Acute AND accident AND first-aid AND guidelines, Surfing AND injuries, first-aid AND tropics AND medicine AND assess, among others. Only open access texts were used. The sources were searched mostly in English, some of the statistics in Finnish. Specific information for the lecture material were widely researched in English and Finnish. Theoretical basis was typed between April 2018 and June 2018.

Learning is described as a complex matter, and the definition of the learning standards and rules has not yet widely described, although many learning theoretical approaches has been launched. Learning theory can be structured to basis of the learning, in which psychological, biological and social conditions are involved. Internal and external conditions for example life age and society as well as application are influencing to the learning process. Learning process itself is described as different dimensions, learning types and structures that are seen as a core of the learning process. (Illeris 2009, 1-8.)

Stimulation in learning has been used in the Medical health care education to authentic treatment situations and entire processes. The stimulation is safe, cost-effective and it gives information of the actual event and mimics the reality. Simulation and practicing consist of active learning in groups, learning trough action

and it has seen as high motivator for learning. The practice examples has been used in emergency procedures as in resuscitation and in Finnish Red Gross CPR learning courses for its convertibility for real life situations and working life. (Pokela & Pokela, 2012, 30-36.) Action learning is about how to be and how to act and how to use the theory in practice. Also by doing, you get the chance to learn from the experiences and questioning the action you have been taken. (Revans, 2011, 11-20.) Many other studies has also shown the affectedness of practical learning, especially for adult learners, improving the memorability, the work flow and motivation in form of a group. Definition of workshop covers the practical training as the discussion of it, in form of a group of people where experiences and knowledge can be shared (HarperCollins Publishers).

The lifesaving workshop consisted basic water lifesaving skills practice at land. According to Lehtinen (2008), Keggenhoff (2004) define the first aid to be all the action before the arrival of the consultant that are necessary in the accidents, acute illnesses and poisoning, to maintain the health of the patient. Resuscitation is recommended internationally for bystanders as drowning rescue technique. One significant study shows that the CPR (cardiopulmonary resuscitation) has been shown to increase the performing of the bystanders CPR, than people without the training (Tanigawa, Iwami, Nishiyama, Nonogi, & Kawamura, 2011). Many countries has been selected the first aid training or the CPR to be teach at schools, and the education might improve the outcomes of the patients survival (Bakke, Steinvik, Angell, & Wisborg, 2017.)

Workshop idea was to give information of the drowning victim, the rescue situations and practice the rescue technique and resuscitation. The workshop started with the demonstration of a drowning victim for the ability to recognize the signs of the person possibly being in danger at the water. Following how to approach to a drowning victim, how to not get in danger while rescuing others, and how to use a surfboard for rescuing a drowning victim. The surfboard rescue consisted first-aid resuscitation a top of the surfboard and how to continue it on land. Participation for

the practice of the rescue with the board was voluntary. Finally there was discussion of the methods and rescue repetitions for those who wanted. The lifesaving workshop was based on the Surfing Medicine International workshop of the World Conference on Surfing 2017, Sagres, Portugal and on the book Drowning: Prevention, Rescue, treatment by Joost J.L.M Bierens.

5 First-Aid and Lifesaving Event for the Surfers

The event was held in Helsinki on 10th of July 2018 by the cooperative organization, Association of Finnish Surfing and Helsinki Surf shop. The audience of 7 people consisted from members of the Association of Finnish Surfing, Finnish surfers and other peers. The event character formed into discussion by the interest of the topics. The event lectures lasted one hour and the practical lifesaving workshop lasted half an hour, total one hour and thirty minutes. The event material is presented in Appendix 1: Event lecture material 07.10.2018 Helsinki.

6 Results, Feedback and Discussion

The feedback of the event was positive. Discussion on the usefulness of the project was held after the workshop. The representative of the Association of Finnish Surfing gave feedback of the importance of the need for this kind of information for the Finnish surfers. Especially the functional lifesaving demonstration was found important and necessary by the audience. The resuscitation guidelines for drowning victim were not familiar to the audience, and the European resuscitation guidelines were uncertain to many. This showed that there is need for basic first-aid and resuscitation course for surfers. The drowning resuscitation material was hard to understand for some people because there was no base training in first-aid that would have support the learning. As a result, the audience may have not got the best

outcome from the event as planned. The results of the feedback showed that the surfers need functional lifesaving skills and first aid training to promote their health and to be able to act in the live threatening situations in the water, after the acute accident or while working their performance in surfing by paying attention to possible chronic diseases.

The surfing health education development in Finland should increase as the need arises by the popularity of the sport. The prospects for the rapid development and evidence based education for the Finnish surfers are looking poor, although the event maybe evoked and inspired the audience to organize this kind of event in the future or distribute the learned thinks to friends and peers. This study only reviewed surfing injuries in wide spectrum. Little is known about surfing injuries statistics in Finland. Although researches of surfing in cold water didn't affect directly to the acute injuries statistics, yet more investigation of the injury types of surfers in Finland is needed. I could see some demand for further research, surveys or other studies on surfing injuries in Finland, rates and injury descriptions due to environmental difficulties such as short rock breaks.

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Appendices

Appendix 1. Event lecture material 07.10.2018 Helsinki.

Preventing Acute Injuries and Promoting Safety Among Finnish Surfers

SUOMEN LAINELAUTALIITTO
ASSOCIATION OF FINNISH SURFING

Henna Hytönen

Sairaanhoitaja-opiskelija
Jyväskylän Ammattikorkeakoulu

Sisällys

- Tapaturmat Suomessa
- Lainelautailun akuutit ja krooniset vammat
- Surffaajan korva - Eksostoosi luukasvama
- Surffaajan silmä - Ultraviolettisäteily ja Pterygium
- Fysiologia ja suorituskyky surffauksessa
- Surffaajan ristiselkä
- Surffaajan Myelopatia – Atraumaattinen selkärangan yliojennus
- Akuutti selkäydinvamma
- Tropiikin tapaturmat ja ensihoito: merieläimet ja riuttahaavat
- Hypotermia
- Hukkuminen - Hypoksia

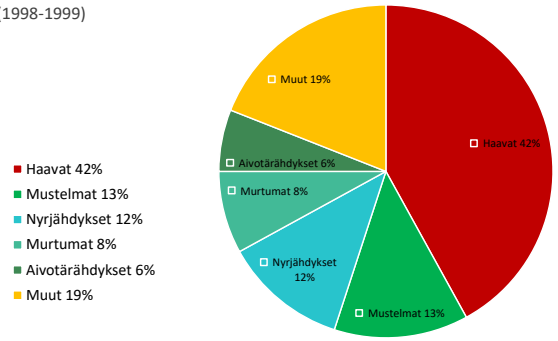
Tapaturmat Suomessa

- Liikuntatapaturmat toiseksi yleisin vamman aiheuttaja Suomessa 2017, 20-74 vuotiaat
- Yhteensä **420 000** kpl, **27%** kaikista tapaturmista
  - Kuntoliikunta (lenkkeily, kävely, hölkkä, sauvakävely) **16%**
  - Kamppailulaji **2%**
  - Lumilautailu, hiihto, laskettelu **6%**
  - Muut lajit **18%**
  - Lainelautailu?

Lainelautailun akuutit ja krooniset vammat

Web-tutkimuskysely 1348 surffarille (1998-1999)

- **1237** Akuuttia vammaa
- **477** Kroonista vammaa



Akuuttien vammojen aiheuttajat

- **67%** Surffilauta
  - **82%** Oma lauta
  - **18%** Toisen surffaajan lauta - surffaajien määrä line-upissa lisää riskiä
- **17%** Merenpohja Hiekka vs. Reef-, kallio- tai kivipohja
- **7%** Aalto
  - **44%** Olkapään korkeudella tai pienempi
  - **47%** Pään korkeudella tai korkeampi
  - **9%** 2x päänkorkeus tai korkeampi, myös vammat vakavammat
- **3%** Merieläimet mm. meduusat, merisiilit, keihäsrauskut, 3 hai, 2 delfiini, 1 hylje
- **7%** Muut

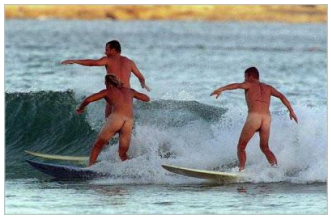
Akuutit vammat

- **35%** Evät
- **18%** Reili
- **7%** Nose
- **5%** Tail
- **2%** Leash
- **6%** Muut
- **9%** Tuntematon
- **18%** Toisen surffaajan laudan aiheuttamia vammoja eniten nosesta ja evistä

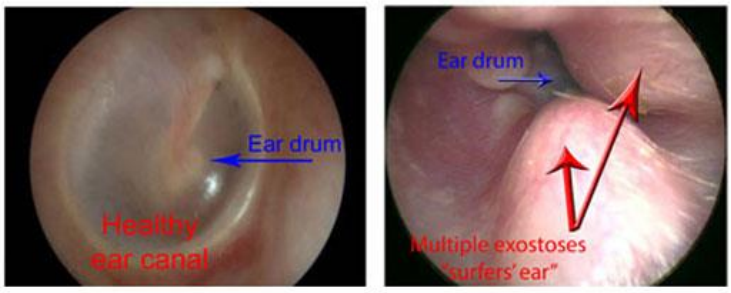
Endless winter vs. Endless summer

- Tapaturmia: **0,74** / 1000 surffattua tuntia
- Tapaturmat: Haavat, mustelmat
- Alue: Pää ja niska

- Tapaturmia: **1,1- 6,6** / 1000 surffattua tuntia
- Tapaturmat: Haavat, nyrjähdykset
- Alue: Alaraajat



Surffaajan korva - Eksostoosi luukasvama

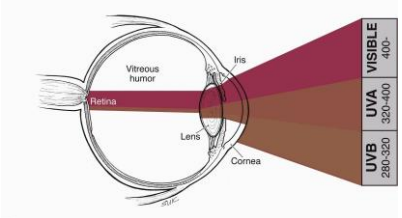


Surffaajan korva - Eksostoosi luukasvama

- Aiheuttaja: Kylmä vesi ja tuuli
- Riskit:
  - Luukasvamaan **12%** / Surffattu vuosi
  - Eksostoosin suurentumaan **10%** / Surffattu vuosi
  - Yli 6 vuoden surffaus, surffaushistoria ja ammattilaisuus
  - Talvisurffaus
  - Muut korvaoireet
- Oireet:
  - Yleensä oireeton, ellei tuki korvakäytävää kokonaan tai paina tärykalvoa
  - Aiheuttaa helposti korvatulehduksia (otitis), hoito antibiooteilla
  - Voi johtaa osittaiseen tai täydelliseen kuuroutumiseen
- Ennaltaehkäisy: Korvatulpat ja neopreeni huppu
- Hoito: Leikkaus, pitkä toipumisaika?!

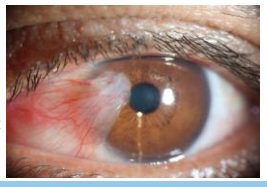
Surffaajan silmä - Ultraviolettisäteily ja Pterygium

- Ultraviolettisäteily 100 – 400 nm
  - UV-C: 100 – 280 nm, Estyy sarveiskalvoon
  - UV-B: 280 – 320 nm, Estyy sarveiskalvoon ja mykiöön
  - UV-A: 320 – 400 nm, Estyy sarveiskalvoon ja mykiöön
- Voi aiheuttaa:
  - Harmaakaihia
  - Silmän sarveiskalvon ja sidekalvon tulehtumisen (fotokeratiitti) eli lumisokeuden
  - UV-A haitat verkkokalvolle ja tarkan näön alueelle lapsilla



Pterygium – Silmän siipikalvo

- Siipikalvo: silmän sidekalvon pienten verisuonien muodostuma, joka kasvaa sarveiskalvon päälle
- Sidekalvo eli silmän suojakalvo ei yleensä kasva sarveiskalvon päälle ja sen siipikalvo pysyy lähellä silmän sisäkulmaa
- Riskitekijät:
  - UV-valo
  - Kuiva ja pölyinen ympäristö
  - Havaittu enemmän tropiikissa, kalastajilla
- Oireet:
  - Valoherkkyys
  - Roskan tunne
  - Silmien vuotaminen
  - Hajataitto
- Ennaltaehkäiseminen: Silmän kosteustipat, UV-suojalla varustetut aurinkolasit
- Hoito: leikkaus, voi uusiutua



- Yli 90% UV-säteilyn takaisinheijastus tuoreesta lumesta, surffilauta?
- Säteily voimakkainta Suomessa klo 11-15
- Säteily heijastuu vedestä ja pinnoilta enemmän aamulla, korkeilla vuorilla sekä pohjoismaissa auringonvalon korkeuskulman takia

Fysiologia ja suorituskyky surffauksessa

Fysiologia ja suorituskyky surffauksessa

- **44%** Melomista (motivaatio, ruuhka, aaltojen tasaisuus)
- **35%** Paikallaan oloa
- **5%** Aallolla surffausta

Surffisession kesto alle 30min- useita tunteja

Syke surffatessa **75%,** meloessa **80%,** paikallaan **71%** maximisykkeestä

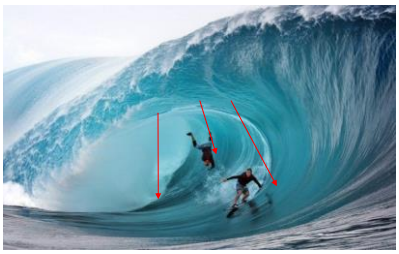
Energian kulutus keskimäärin **33.7 kJ.min**
Keskimääräinen/session **2077 kJ (± 322.1)**

1 jalka aallon korkeutta = 1 maili tunnissa nopeutta

1 jalka ≈ 0,3 m

1 maili ≈ 1,6 km

Aallon korkeus Metrejä	Aallon nopeus Km/h	Aallon nopeus/korkeus mph/ft	Pudotus nopeus Km/h	Kokonaisnopeus Km/h
0.3	7	4.4	9	11
1	13	2.5	16	21
3	22	1.4	28	34
10	41	0.8	51	65

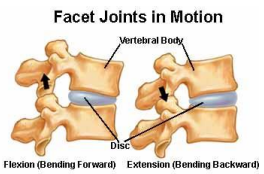


44% Melomista
35% Paikallaan oloa
5% Aallolla surffausta

Surffaajan ristiselkä

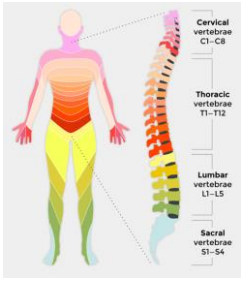
- Ristiselän vammat **23.2%** kaikista kroonista sairauksista (yli 3kk kestävä) Retrospektiivinen analyysi Australia
- Ristiselkä (lanneranka) kompensoi rintanikamien ja kaulanikamien joustamattomuutta - Välilevyrappeuma
- Aiheuttajat:
  - **25.9%** Käännökset: Flexio ja rotaatio
  - **38.5%** Pitkäaikainen melominen, laudalla makaaminen - selän hyperextentio
- Riskitekijät:
  - Ikä yli 39v.
  - Kilpailu- vs. harrastesurffaaja
  - Surffituntien määrä ei lisännyt huomattavasti kroonistumia

741 harrastesurffaajasta **56%** kärsii ristiselän kivusta
163 ammattisurffaajasta noin **70%**



Surffaajan Myelopatia – Atraumaattinen selkärangan yliojennus

- Selkäydinvauriota aiheuttava yliojennusvamma
- Aiheuttaja: Selän hyperextentio, staattinen ja aktiivinen
- Riskitekijät:
  - Aloittelevat surffarit **89.5%–100%** kaikista tapauksista (kirjallisuuskatsaus 2017)
  - Selkää tukevien lihasten huono kunto
- Oireet:
  - Alaraajojen osittainen/täydellinen halvaus, alaraajojen lihasheikkous
  - Virtsaamiskyvyttömyys
  - Lisääntynyt tuntoherkkyys
  - Oireet saattavat lieventyä osalla, tai jäädä pysyväksi
- Liitännäissairaudet, oireiden tausta:
  - Selkäytimen iskemia, suonien repeytymät…



- Ehkäiseminen:
  - Istuminen laudan päällä selkä suorassa
  - Selkälihasten vahvistaminen
  - Aloittelevilla surffaajilla harjoittelun lopettaminen heti jos selkäkipuja ilmenee

Akuutti selkäydinvamma

Selkärangan stabilisaatio
- Manuaalinen
- Tukikaulurit ei suositeltavia ensihoitotilanteissa
- Surffilauta

Tropiikin tapaturmat ja ensihoito

- Meressä noin 2000 ihmiselle myrkyllistä merieläintä
- Merieläimien pistot kudostuhoa aiheuttavia (nekroosi)
- Tetanusprofylaksi – Jäykkäkouristukselta suojaava rokote, jos riski erityisen suuri
  - Ota rokotteet (3) jos edellisestä rokotuksesta on yli 10 vuotta (käypä hoito suositus)

Trooppiset merieläimet

- Meduusat
  - Ensihoito: Etikka-liuos, suola vesi puhdistus, poista näkyvät lonkerot, immobilisaatio, kylmäpakkaukset, vältä alueen hieromista! Kuuma vesi (käypä hoito.)
  - Australian kuutiomedusan (2/3 menehtyy, vasta-aine) ja Portugalinsotalaivan pistot vaativat välitöntä sairaalahoitoa, kaikki muut: 10-15 min kivun jälkeen ensiapuun
- Skorpionikalat: Siipisimppu (Lionfish), skorpionikala (Scorpionfish) ja kivikala (Stonefish)
  - Kivulias, hengitys- ja verenkiertolamaa aiheuttava
  - Toksiineja sisältävä myrkky, lämpölabiileja
  - Hoito: Upotus ja huuhtelu lämpimällä yli 45 asteisella vedellä 30min. Piikkien poisto aseptisesti, profylaktiset ja laajat mikrobilääkkeet

Tropiikin ensiapu - Riuttahaavat

Riuttahaavat - Hoito

1. Puhdistus suolavedellä! Lämpölabiilit mikrobit?
2. Puhdistus ja näkyvien epäpuhtauksien poisto
3. Puhdistus
4. Hydroperoksidi, vältä ylikäyttöä
5. Suojaus ja säännöllinen puhdistus

Hypotermia

- Normaali lämpö 37℃
- Hypotermiassa lämpö alle 35℃
- Kehon lämmönjohtokyky vedessä 4-5 kertaa nopeampaa kuin ilman lämpötilassa
- Ydinlämpö hypotermiassa
  - Lievä 32℃
  - Kohtalainen 32- 28℃
  - Vaikea alle 28℃
- Ihon, hermojen, lihaksien, syvien kudoksien sekä kehon ytimen lämpö laskee
- Kehon suuri rasvapitoisuus lisää selviytymistä, kuitenkin naisten/ kehon pinta-ala lisää lämmönjohtamista

Hypotermia

- Oireet ydinlämmön laskiessa
  - 35℃ - Sekavuus, sulkeutuneisuus, aggressio
  - 34℃ - Muistinmenetys
  - 33℃ - Sydämen rytmihäiriöt
  - 33- 30℃ - Tajunnan sumentuminen
  - 30℃ - Tajunnan menetys
  - 28 ℃ - Kammiovärinä
  - 25℃ - Sydämen pysähdys
- Vapina on kehon mekanismi lämmittää ruumista

Hypotermia

- Kuolemaan johtavat riskit kylmässä vedessä, arviot:

1. Äkillinen: Shokki, veden aspiraatio jonka seuraamuksena hukkuminen (n. 2min)
2. Lyhyt: Raajojen lämmön menetys, seurauksena uimisen ja kelluntavälineeseen tai pelastuslauttaan tarrautumisen vaikeutuminen johtaen aspiraatioon ja hukkumiseen (10-20 min, 0-10°C vedessä)
3. Pitkittynyt: Pään pinnalla pitäminen pelastusvälineen varassa jonka seurauksena hypotermia

- Shokki: hengitysvaikeudet, verenpaineen nousu, sydänlihaksen työtehon lisääntyminen, plasman katekoliamiinien nousu (adrenaliini, noradrenaliini ja dopamiini)
- Kasvojen alueen kylmäreseptorit: vasokonstriktio (verisuonten supistuminen), bradycardia (harvalyöntisyys), apnea (hengityksen pidätys)
  - Parasympaattinen hermosto aktivoi sukellusjärjestelmän – pidentää sukellusaikaa

Hypotermia – Ehkäiseminen ja pelastus

- Ehkäiseminen:
  - Kelluntavälineet: märkäpuku, liivit
  - Pelastettava kokonaan tai edes osittain pois vedestä
- Pelastus
  - Horisontaalinen, pelastettava selällään – muista aspiraatio riski
  - Minimaalinen pelastettavan liikutus – sydänpysähdyksen riski
  - Oksentaminen yleistä – Aspiraatio riski!
  - Jäävesi – pelastus myös yli 1h sukelluksissa/vedessä olleille
  - Tajuttoman ensiapuna vitaalitoimintojen ylläpitäminen – **CPR elvytys, defi.** hypotermia toissijainen
  - Rintalasta voi olla hypotermiassa jäykkä, elvytys raskaampaa
  - Laryngospasmaisuus (äänihuulisalpaus) vaikeuttaa puhalluselvytystä, erityisesti lapsilla!

Hypotermia - Hoito

- ABCDE – Ilmatiet, hengitys, verenkierto, tajunnan taso, vammat
- Sairaalaan hakeutuminen, seuranta
- Tajuissaan olevan vapisevan lämmitys
  - Itse lämpiävä, kuivat vaatteet
  - Lämmin ilma, lämpöpakkaukset, iho-iho kontakti, peitot ja makuupussit, lämpimät sokeripitoiset juomat
  - Varo kylmän ihon paloherkkyyttä
- Tajuttoman, ei-vapisevan lämmitys
  - Metabolismi ei lämmitä itse
  - Ulkoiset lämmitys-systeemit rinnalle ja kaulalle
  - Vältä potilaan turhaa siirtelyä – kammiovärinän vaara
  - Lämmin happi
  - Älä upota kuumaan veteen. Avaruuspuku?

”Kukaan ei ole kuollut ennen kuin on lämmin ja kuollut”

Hypotermia – Jotain positiivista!

Normaali lämpö 37°C
- Hypoksia eli hapenpuute aiheuttaa merkittäviä pysyviä aivovauriot 10 minuutissa

Pään lämpötilan laskiessa 7°C normaalilämmöstä **kaksinkertaistaa** hypoksian (hapenpuutteen) selviytymisaikaa!
- Voi mahdollistaa pidemmän, onnistuneen elvytysajan hukkuvalle
- Aivovaurioiden vähentyminen

Hukkuminen - Hypoksia

- Hypoksia eli hapenpuute
  - Veden aspiraatio
  - Laryngospasmi – hukkuvalla ei vettä keuhkoissa, kaasujen vaihtoa ei tapahdu happi-hiilidioksidi
  - Molemmat
- Aiheuttaa
  - Sydämen epätasaisia rytmejä jonka seurauksena sydämen pysähdys ja kuolema

Hukkuminen ja elvytys

- **Puhalluselvytys ASAP x 5**
- **Paineluelvytys x 30** (100-120 x min), **puhallus x2** (n.1-2sek/puhallus tai kunnes rintakehä noussut), puhallus myös mahanesteiden läpi

- AED Defibrillaattori
  - Defibrilloitavat rytmit: kammiovärinä ja kammiotakykardia
- Asystole (Sydämen täydellinen pysähtyminen) ja muut ei defibrilloitavat rytmit
  - Painelu-puhalluselvytys
- Veden tyhjentämistä keuhkoista ei suositella
- Hengittävä, tajuton potilas kylkiasentoon, tarkista pulssi
- Selkärangan vammojen ei tulisi viivästyttää elvytystä
  - Ilmateiden avauksessa tukeminen leuka- niska otteella

Kiitos!