The Effect of Giving Cold Therapy to Decreased Pain Sprain Ankle Basketball Players
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Abstract
Sprain, is an injury to a joint that results in a torn ligament that functions as a binding between bones and as a stabilizer for the joint that occurs due to excessive pressure and sudden movements repeatedly. It is estimated that nearly 1.6 million injuries occur in connection with basketball in Indonesia. The epidemiology of injuries to male basketball players during training is 4.3 per 1000 while the competition is 9.9 per 1000. This study is an experimental study with a Two Group Pre-Test and Post-Test Design. The research subjects were 30 permanent members of the Bangau Basketball Club which were divided into 2 groups: O1 group was a group that was given cold therapy before training alone, O2 group was a group that was given cold therapy after exercise alone. The study was conducted in October-November 2018. There was a difference between pain intensity and the degree of ankle sprain O1 group before and after exercise with the pain intensity difference test value of 0.000 and the value of the ankle sprain degree difference test result of 0.029 (p <0.05). There was a difference between the intensity of pain and the degree of ankle sprain in the O2 group before and after exercise with the test value of the pain intensity difference of 0.024 and the value of the test result of the degree of ankle sprain difference of 0.047 (p <0.05). Wilcoxon test results showed that there was an effect of cold therapy to reduce ankle sprain pain with p <0.05.

Keywords: heat therapy, cold therapy, sprain ankle.
The intervention is given on fixed schedule exercise basket do. Before and after exercise assessed the intensity of the pain by using Pain Tools Scale (Visual Analog Scale) and sprain ankle degree. There are the design table researches Two Group Pre-Test and Post-Test Design.

The study subject is divide into 2 groups there are: the group O1 is the group that given cold therapy before exercise only, group O2 is group that given cold therapy after exercise only. Intervention is given to fixed schedule basket exercise do. Exercise before and after is assessed the intensity of the pain by using Pain Tools Scale (Visual Analog Scale) and sprain ankle degree. There are the research design tables Two Group Pre-Test and Post-Test Design.

RESULT

DISCUSSION

Based on the result, it can explain that the pain that experienced by group O1 basket player before exercise (pretest) is 15 people with mild intensity pain (50%) and 15 people with moderate (50%).

The result is in line with research of (Nurjahannah, 2016), where the pain can be understand with different between individual, it depend on perception. Even though, any one differences about pain perception. In simple pain can be interpreted as a sensation that not fun whether sensory or emotional that related with any tissue damage or other factor.

Based on the research, it can get that pain experienced by group O1 basket ball player after exercise most of it is 27 people with mild pain intensity (90%). The result is in the line with research. (Nurjahannah, 2016), the Pain happen if any mechanical stimulation, thermal or chemistry that past certain stimuli of excitement. These stimuli are detected by nociceptors which are the

RESEARCH METHOD

This research is experimental research with Two Group Pre-Test and Post-Test Design plan. The subject is divided into 2 groups there are: the group O1 is group that given cold therapy before exercise only, group O2 is group that given cold therapy after exercise only. Intervention is given on fixed schedule exercise basket is do. Before and after exercise assessed the intensity of the pain using Pain Tools Scale (Visual Analog Scale) and Sprain Ankle degree. There are the design table researches Two Group Pre-Test and Post-Test Design.
free nerve endings. The stimulation will be carried as nerve impulses through Delta A fibers which myelinated, has fast delivery speed, and responsible to handle fast, sharp, and localized pain, and C fibers that are not myelinated with slow nerve speed and are responsible for painful blunt and not localized pain. The factors that related with causing pain is the conditions that causing injury whether Biology, Chemistry, Physical, or Psychology.

Based on the research, it can get that the part of sprain ankle degree that experienced by group O1 basket player before exercise is Degree I where ligament feels pain, it occur hematoma (hematoma) mild is 21 people (70%). The result is in line with research of (Nurjannah, 2016), the injury can be happened because muscle coordination and not perfect joint, until causing the wrong moving and causing injury. This is can be happen because lack of warming up, lack of concentration or the condition of athlete in physical and mental is weak.

Based on the research, it is obtained that part of sprain ankle degree that experienced by group O2 basket player before exercise is 18 people with moderate pain intensity (60%). Based on the research that done by (Hermawan, 2015). Sprain is an injury that related injury to ligament (tissue that connects bone to other bone) or joint capsule. The Severe damage on this joint it will cause the joint is become not stable. The symptom is causing a pain feeling, swollen, bruised, inflammation, instability and losing the ability to moving. But, the signs and symptom can be variation in intensity, it depends on the severity of the sprain.

Based on the research, it is obtained the pain that experienced by group O2 basket player after exercise as part of 23 people with mild pain intensity (76.7%). Based on the research (Hermawan, 2015), sport injury can cause by internal factor and from external, this is like referring by Arif Setywawan (Hermawan, 2015) that exercise Injury between them it can cause by collision while in exercise or competency, weak muscle, overuse or facility and pre-facility that not good. The exercise that is causing injury sports is exercise (30%), competency (35%), sport class (20%), and informal playing (15%).

The result is showing that part of sprain ankle degree that experienced by group O2 basket player before exercise is Degree II where Ligament is felt hot and swollen is 16 people (53.3%). According International Olympic Committee Medical Commission in Sport Medicine Manual that is quoted by (Hermawan, 2015). Based on the injury levels, the exercise is divided are 1). Higher risks sport, 2). Moderate risks sport, 3). Lower risks sport. The exercise that include moderate risks is; all the athletic exercise, including marathon running 30 km and walking 50 km, badminton, baseball, basketball, biathlon, bobsled and luge, cross country skiing, canoeing, rowing, softball, tennis outdoor.

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is 0.029 so this thing can be showed that both those value is <0.05, can be conclude that H0 is reject and H1 is accept are a differences between pain intensity or sprain ankle degree group O1 before and after exercise. Based on research (Atmojo, 2017), Ankle sprain occur because excessive pain (overstretching and hypermobility) or sudden inversion and plantar flexion trauma, while exercising, physical activity, while leg is not resting perfectly to the floor/ground until causing ligament structures to stretch beyond normal physiological and functional lengths. Elongation causes tearing of the lateral complex ligaments, this will cause pain when contracting. The pain causes immobility resulting in decreased muscle strength and limited mobility.

Then based in (Hermawan, 2015) Research ankle injury is caused by the pressure to make a sudden turning motion. Ankle injury can affect not only the side of the ankle but usually can also damage the outer (lateral) ligaments. With the support of a lot of nutrients and oxygen, metabolism at the site of injury will increase with the rest of the metabolism in the form of heat. That condition causes the location of the injured ankle area to be hotter (hot) compared to other locations that did not experience injury. Stacks of metabolic waste and other chemicals will stimulate nerve endings in the injured ankle and causing pain (dolor). This pain feeling is triggered by depressed nerve endings. Those inflammation signs symptoms will decrease the organ function or dislocation joint injury that called with the term joint decrease or functiolaesa.

The result is showing pain intensity difference test is 0.024 and sprain ankle degree different test is 0.47 so this thing is showing that those both values <0.05, can concluded H0 accepted and H1 rejected are a differences between pain intensity and sprain ankle degree group O2 before and after exercise.

Based on (Atmojo, 2017) research, ankle injury can be happen when sprained at suddenly continue with any response from body with inflammation signs that include from rubor (red), kalor (hot), tumor (swollen), dolor (pain), and functiolaesa (function decrease).

Then according to (Setiawan, 2011) research, causing exercise injury is usually from traumatic/collision in direct or exercise that repeatedly in a long time. This causing is divided into 1) external factor, is: (a) football, basket, boxing, karate; (b) exercise tools: stick hockey, racket, ball; (c) Field conditions: slippery, uneven, muddy; 2) internal factor, are: (a) anatomy factor. Unequal leg length, flat foot arch, tiptoe, so that when running it will interfere with movement; (b) Wrong

### CONCLUSION

#### Analysis univariate Group O1
1) Pain that experienced by group O1 basket players before exercise is 15 people with mild intensity pain (50%) and 15 people with moderate intensity pain (50%).
2) The pain that experienced by group O1 basket players after half of exercise is 27 people with mild intensity pain (90%).
3) Half of sprain ankle degree that experienced group O1 basket player before exercise is I degree where the ligament is feels sick, become inflammation (hematoma) mild is 21 peoples (70%).
4) Half of sprain ankle that experienced by group O1 basket player after exercise is Degree II where the Ligament is felt hot and swollen is 27 peoples (90%).

#### Analysis univariate Group O2
1) Most of the pain that experienced by group O2 basket player before exercise is 18 peoples with moderate pain intensity is (60%).
2) The pain that experienced by Group O2 basket players after exercise most of it is 23 peoples with mild pain intensity (76.7%).
3) Most of it sprain ankle degree experienced by group O2 basket player before exercise is Degree II where the Ligament it felt hot and swollen is 16 people (53.3%).
4) Most of it sprain ankle degree that experienced by group O2 basket player after exercise is Degree II where the Ligament is felt hot and swollen is 23 peoples (76.7%).

#### Analysis bivariate
1) Pain intensity different test is 0.000 and the result of sprain ankle degree different test is 0.29 so this thing showing that those both values <0.05, can conclude H0 is reject and H1 is accepted are a different between pain intensity and sprain ankle degree group O1 before and after exercise.
2) Pain intensity different test is 0.024 and sprain ankle degree different test is 0.047 so this thing is showing that those both value <0.05, can be conclude H0 is accepted and H1 is rejected are a different between pain intensity and sprain ankle group O2 before and after exercise.
3) Based on the result of wilcoxon test to know is there any effect of giving cold therapy through sprain ankle pain decreased, it show that all the values is showing each variable comparison <0.05 is 0.008, 0.000, 0.000, 0.000 that means any effect giving cold therapy through sprain ankle pain decreased.

Compliance with ethics requirements: The authors declare no conflict of interest regarding this article. The authors declare that all the procedures and experiments of this study respect the ethical standards in the Helsinki Declaration of 1975, as revised in 2008(5), as well as the national law. Informed consent was obtained from all the patients included in the study.

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