

## The Effect of Vibration Therapy on Reduction of Matrix Metalloproteinase-9 in Diabetic Ulcer

<b>Title</b>	The Effect of Vibration Therapy on Reduction of Matrix Metalloproteinase-9 in Diabetic Ulcer
<b>Author Order</b>	1 of 4
<b>Accreditation</b>	
<b>Abstract</b>	<p>One important reason why diabetic ulcer fails to heal is an increase of collagen degradation by matrix metalloproteinase-9 (MMP-9). Vibration therapy is one of complementary therapies which can reduce inflammation and improve reepithelialization. However, up to present, there is no study that investigate the effect of vibration on reduction of MMP-9 in diabetic ulcer. Therefore, the effect of vibration on reduction of collagen degradation in diabetic ulcer is still unknown. If vibration can reduce collagen degradation in diabetic ulcer, nurse can recommend patients to apply vibration not only during inflammation and proliferation phase, but also during maturation phase since MMP-9 also contributes to collagen degradation during maturation phase. The purpose of this study was to investigate the effect of vibration on reduction of MMP-9 in diabetic ulcer. Diabetic rats were divided into two groups, vibration and control groups. The intensity of polymorphonuclears cells (PMNs) and fibroblast, collagen appearance, and the presence of positive cells for MMP-9 were compared. Fibroblast, PMNs and collagen appearance were stained with H and E staining, and MMP-9 was stained by immunohistochemistry method. The difference in the intensity of fibroblast and PMNs was analyzed by Mann-Whitney U test. The result showed that the intensity of PMNs was significantly lower, and the intensity of fibroblast was higher in vibration group than in control. Collagen alignment in the vibration group was more organized in a more regular fashion than in control group. The intensity of positive cells for MMP-9 was lower in the vibration group than in control group. This study showed that vibration could reduce MMP-9, therefore it could be concluded that vibration could reduce collagen degradation of diabetic ulcer. This study bring implication in the clinical setting that vibration therapy should also be applied during maturation phase since MMP-9 is also released in the maturation phase.</p>
<b>Publisher Name</b>	Jurusan Keperawatan FIKES UNSOED
<b>Publish Date</b>	2016-11-01
<b>Publish Year</b>	2016
<b>Doi</b>	DOI: 10.20884/1.jks.2016.11.3.701
<b>Citation</b>	
<b>Source</b>	Jurnal Keperawatan Soedirman
<b>Source Issue</b>	Vol 11, No 3 (2016)
<b>Source Page</b>	150-157
<b>Url</b>	<a href="http://jks.fikes.unsoed.ac.id/index.php/jks/article/view/701/394">http://jks.fikes.unsoed.ac.id/index.php/jks/article/view/701/394</a>
<b>Author</b>	Prof. YUNITA SARI, S.Kep., Ns., MHS., Ph.D