Journal of Community Engagement in Health
https://jceh.org/ https://doi.org/10.30994/jceh.v8i2.729
ISSN: 2620-3758 (print); 2620-3766 (online) Vol. 8 No. 2 September 2025. Page 197-204

Group Activity Therapy Stretching as Preventive Action for Musculoskeletal Emergencies in the Elderly at Healthcare and Rehabilitation Unit Magetan

Hery Ernawati[1*], Sri Andayani[2], Elfa Afiani[3], Nur Alvi[4], Apdha Triwulan Hafsarini[5], Retno Dwi Ambarwari[6]
[1,5,6] *Nursing Profession, Faculty of Health Sciences, Universitas Muhammadiyah Ponorogo, Indonesia*
[2,3,4,] *Bachelor of Nursing, Faculty of Health Sciences, Universitas Muhammadiyah Ponorogo, Indonesia*
[*]***Corresponding author:*** *heryernawati@gmail.com*

ABSTRACT
Aging impacts musculoskeletal function declines, such as joint stiffness and muscle pain, which can trigger geriatric emergencies like falls and immobilization. This study aimed to determine the effectiveness of stretching-based group activity therapy in reducing pain and improving mortality in the elderly. The design used was a quasi-experimental pre-test and post-test without a control group, involving 47 elderly at the Pelayanan Sosial Tresna Werdha Magetan (Healthcare and Rehabilitation Unit). The intervention was conducted in one 40-minute, consisting of statistical and dynamic stretching of several body parts. Evaluation was conducted using a Visual Analog Scale. Results showed a significant reduction in pain (median Visual Analog Scale from 6–8 to 2–3) and active participation by all participants. The discussion confirmed that group activity therapy stretching is effective as a non-pharmacological intervention for preventing chronic pain and the risk of musculoskeletal emergencies in the elderly, and provides psychosocial benefits through group interaction.

Keywords **:** Elderly, Emergencies, Group Activity Therapy, Musculoskeletal Disorders, Stretching

Received : July 22, 2025
Revised : August 08, 2025
Accepted : September 30, 2025

INTRODUCTION

Aging process naturally causes a decline in physiological and structural functions, which directly impacts the quality of life elderly. One of the most common health problems is musculoskeletal disorders, which are disorders of the muscles, bones, and joints characterized by pain, stiffness, and limited movement (WHO, 2022). As the global population ages, degeneration of the musculoskeletal system has become a major health concern. Aging affects muscles, bones, joints, and connective tissues, leading to progressive structural and functional declines (Parlak Baskurt & Yardımcı, 2025). These physiological changes manifest as common geriatric musculoskeletal disorders – notably sarcopenia (loss of muscle

mass/strength), osteoporosis (bone fragility), osteoarthritis (degenerative joint disease), and chronic musculoskeletal pain. These conditions are highly prevalent in older adults and significantly impact mobility, independence, and quality of life (Horgas & Elliott, 2021; Ma et al., 2025). These complaints can affect the ability of older adults to carry out daily activities independently, increase the risk of falls, and even lead to dependence and social isolation (Han et al., 2025). Musculoskeletal disorders such as osteoarthritis, sarcopenia, and low back pain are major problems that significantly reduce the quality of life of the elderly, both physically and psychologically (Beaudart et al., 2024).

Musculoskeletal disorders are also a leading cause of emergency situations the elderly, particularly those related to falls, fractures, sudden immobilization, and acute pain that interferes with basic activities of daily living (ADL)(Wakale et al., 2023). Approximately 20% of older adults who fall experience serious injuries such as fractures, head trauma (Vaishya & Vaish, 2020). A study by (Gutiérrez-Valencia, M., Izquierdo, M., Cesari, M., Casas-Herrero, Á., Inzitari, M., & Martínez-Velilla, 2021) showed that chronic musculoskeletal pain can progress to acute conditions if not properly managed, and is a leading cause of emergency department visits in the age 65 years.

Give the risk of these emergency, preventive strategies based on increasing mobility, strengthening muscles, and improving balance are crucial. One approach is through non-pharmacological approaches such as stretching exercises. stretching exercises reduce arterial stiffness, HR, and DBP, and improve vascular endothelial function in middle-aged and older adults (Kato et al., 2020). This intervention has been shown to be effective in reducing joint pain and stiffness when performed regularly and correctly. In addition to the physiological benefits, stretching performed in groups can also improve the social and emotional aspects of older adults, provide a space for interaction, and foster a sense of collective spirit (Ponnampalam et al., 2020).

In context of geriatric nursing, one widely used holistic approach is Group Activity Therapy (GAT). GAT a nursing intervention aimed at improving an individual cognitive, emotional, social, and physical function through structured group activities (Nasution, M., & Afiyanti, 2022). Most previous research has focused on individual interventions (home-based or personal), while the involvement of group activity therapy is still limited (Susilawati et al., 2025). In the elderly, GAT for increase self-confidence, reduce feelings of loneliness, and help improve social interaction skills (Rizkiyani, D., & Puspitasari, 2021). GAT has also been shown to be effective in increasing elderly participation in health programs because it is participatory, enjoyable, and based on the elderly's existing abilities (Gough et al., 2021). Therefore, the integration of stretching and GAT is an innovative approach that not only improves musculoskeletal function but provides much needed psychosocial support for elderly.

However, most previous research has focused on individual interventions, and few have examined the effectiveness of stretching in the GAT format, particularly in social care settings. The GAT approach allows for synergy between physical and psychosocial benefits, but scientific evidence regarding its effectiveness is still limited. Therefore, this study was conducted to evaluate the impact of implementing GAT with the stretching method on preventing and reducing musculoskeletal disorders and potentially preventing emergencies in the elderly. This community service is expected to address the existing literature gap and offer a comprehensive solution that simultaneously addresses the physical dimensions of the elderly.

METHOD

This community service activity was carried out among elderly residents at the Social Service Institution Tresna Werdha (UPT PSTW) Magetan, East Java. The participants were aged 60 years and above, did not experience immobilization problems, and were able to follow instructions. The intervention provided was a group activity therapy (GAT) with stretching exercises, aimed at preventing and reducing musculoskeletal disorders among the elderly. The program was conducted on December 7, 2024, with the involvement of students from the Faculty of Health Sciences, Universitas Muhammadiyah Ponorogo, together with staff members from UPT PSTW Magetan, who acted as facilitators.

The GAT stretching session was carried out for approximately 40 minutes. The activity began with a demonstration using a video, followed by joint practice of stretching movements. Participants performed the exercises in a seated position on chairs. The stretching focused on the neck, shoulders, arms, back, and lower limbs. Each movement was performed slowly and repeatedly, adjusted according to the physical ability of each elderly participant. To evaluate the effectiveness of the GAT stretching, outcomes were measured using two approaches; Pain intensity of joints and muscles assessed with the *Visual Analog Scale (VAS)* before and after the intervention, and Flexibility and movement ability, assessed with a checklist that also captured participants' level of engagement during the session.

Data were analyzed quantitatively using SPSS version 25. The Wilcoxon Signed Rank Test was employed to compare pre-test and post-test data, considering the ordinal scale and non-normal distribution of the dataset. A significance level of $p < 0.05$ was applied. In addition, descriptive statistics (mean, median, and standard deviation) were used to describe participants' characteristics and to present changes in outcome scores before and after the intervention.

Significant improvement based on VAS scores, increased muscle and joint flexibility, particularly in the upper and lower extremities, and the ability to follow instructions in the context of group activities. The flow of community service activities is as follows.

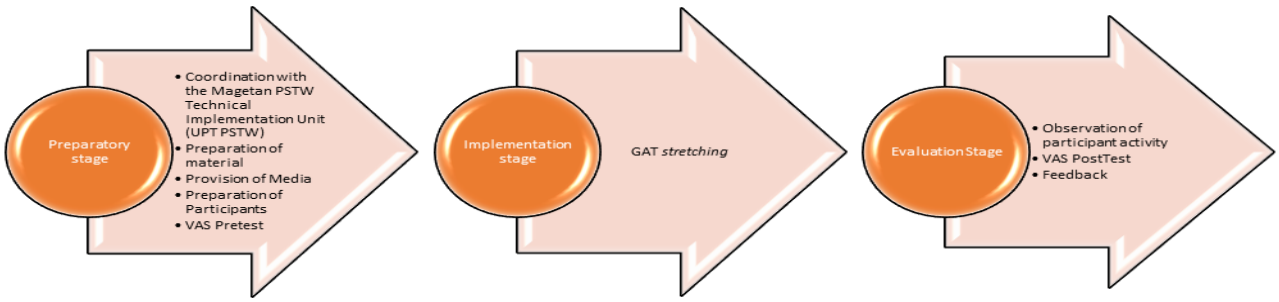

Figure 1. Community Service activity flow

RESULTS

Community service activities were carried out in three stages: (1) the preparation stage, including the preparation of material, provision of aids such as LCD and sound systems, and filling out pre-test instruments for the elderly, as well as coordination with the management of the UPT PSTW Magetan; (2) the implementation stage, namely group

activity therapy with stretching involving 47 elderly in the UPT PSTW Magetan Hall for 40 minutes; and (3) the evaluation stage, with observation of participant activity, filling out post-test instruments, and verbal feedback from the elderly.

Table 1. Respondent Characteristic

Characteristic	**Amount (N = 47)**	**Percentage (%)**
Gender		
Male	18	38.3
Female	29	61.7
Age (year)		
60–69	20	42.6
70–79	17	36.2
≥80	10	21.2

Source: Primary Data

Table 2. Results of Pre-Test and Post-Test Pain Score (VAS)

Visual Analog Scale (VAS)	VAS Pre-Test	VAS Post-Test
Heaviness	24	0
Moderate	23	20
Slight	0	27
Amount	47	47
p-value	0.00	

Source: Primary Data

The implementation of stretching-based group activity therapy showed a clear benefit in reducing musculoskeletal complaints among the elderly. After the intervention, participants experienced a significant decrease in pain intensity and improved physical comfort. The activity not only helped alleviate existing musculoskeletal problems but also served as a preventive measure by promoting flexibility and joint mobility. The structured stretching movements, carried out in a supportive group setting, encouraged active participation and created a positive environment for maintaining physical health in older adults. Statistical analysis confirmed the effectiveness of this intervention, reinforcing its potential as a simple, low-cost, and safe strategy to enhance musculoskeletal health and overall well-being among the elderly.

Figure 2. Documentation of Stretching Activities with the Elderly

DISCUSSION

This community service has confirmed that the stretching-based Group Activity Therapy (GAT) intervention has a significant effect on reducing musculoskeletal pain and increasing flexibility in the elderly at the UPT PSTW Magetan. The decrease in the Visual Analog Scale (VAS) score indicates a rapid analgesic effect, equivalent to the findings of

(Gandotra et al., 2020) who reported a significant decrease in VAS for back pain in the elderly after six weeks of stretching ($\Delta VAS \approx -3.3$; $p < 0.001$). This research data is in line with the Cochrane review by (Sherrington et al., 2020) which found that a group exercise program reduced the risk of falls by up to 25% (RR 0.75; CI 0.71–0.83) (Pinheiro et al., 2020; Sherrington et al., 2020).

A review of stretching practices published (Warneke et al., 2025) recommends that stretching be combined with muscle strengthening approaches and clinical education for optimal results in the geriatric population. This is relevant to our design, which, although simple, provides an initial overview of the benefits of stretching, particularly in a group format. Strengthened this evidence that stretching reduces muscle stiffness and increases ROM, as well as decreasing nerve pressure that triggers pain, although some results varied depending on the population and duration of the intervention (Konrad et al., 2025). In the context of knee osteoarthritis, the review by (Santos et al., 2024) emphasizes that physical exercise—particularly flexibility—reduces pain and delays the need for surgical intervention in elderly patients with OA. This aligns with the practical opinion that stretching not only improves range of motion but also prevents the progression of musculoskeletal disability.

Although the program did not focus on stretching, data from the (Muanjai et al., 2025), that combined stretching with multi-component exercises reported an 18% increase in lower back muscle strength ($p<0.05$). A key feature of this intervention was the group format, which, in addition to increasing physiological efficacy, also provided a social boost—an effect consistent with the results of a study by (Kulkarni et al., 2023) that reported significant improvements in balance (↑ Timed Up and Go test by 2.8 seconds; $p<0.005$) and quality of life (SF-12 ↑13%) after 10 weeks of group exercise.

Recent studies highlight that both static and dynamic stretching significantly improve joint flexibility and reduce muscle stiffness, while also enhancing vascular function and local perfusion. For example, (Kato et al., 2020) and (Lohmann et al., 2024) demonstrated that regular stretching improves endothelial function and decreases arterial stiffness, thereby reducing musculoskeletal discomfort and the risk of injury. Musculoskeletal emergencies such as falls and fractures are a serious problem. Each year, approximately one-third of older adults in the community experience falls, and 30–50% of these fall with serious consequences (fractures, head trauma). Preventive interventions through exercise, including stretching, have been shown to reduce the risk of falls by 34% (RR 0.66; 95% CI 0.50–0.87) (Pinheiro et al., 2020; Sherrington et al., 2020).

In addition, the longitudinal study (Støve et al., 2024) on healthy individuals (although not elderly) found that six weeks of stretching reduced regional pain sensitivity by 36.7% and increased flexibility in ROM by 3.6% ($p < 0.01$), and the hypoalgesia effects lasted four weeks after the intervention was stopped. This provides a theoretical basis that stretching modulates pain sensitivity—something that may also occur in the elderly with chronic joint pain. A systematic meta-analysis compared various types of stretching for knee osteoarthritis and found that proprioceptive stretching and mind-body exercises like yoga were more effective in reducing pain and stiffness than static stretching alone. Although our program is simpler, our results demonstrate that the combination of static and dynamic stretching in a group context provides a significant therapeutic impact (Guan-Cheng Zhu PhD et al., 2024).

Socially, the role of group-based exercise is very significant in maintaining motivation and attendance among the elderly. The study shows that online group exercise consistently increases physical participation among the elderly and is accepted even though fitness levels

vary (Diaz et al., 2024). These findings provide a strong basis for suggesting that GAT stretching can be an important preventive strategy in preventing emergency incidents. Its simple, inexpensive, and replicable implementation model makes it a practical solution for integration into elderly care packages at posyandu, community health centers (puskesmas), or nursing homes. This research fills an important gap; since (Gandotra et al., 2020) study, much of the focus has been on individual stretching protocols, while recent literature emphasizes multi-component exercise, but few studies have examined stretching in a group format with emergency outcomes. These findings confirm that holistic care, which considers both physical and psychosocial aspects, can have a broader preventive effect.

This community service activity has several limitations. The design applied a pre-test and post-test approach without a control group, making it difficult to rule out external influences on the outcomes. The intervention was conducted in a single short session of 40 minutes, so the long-term effects remain uncertain. The measurement tools, including VAS and observation checklists, relied on subjective assessment, which may have influenced the results. In addition, the study was limited to one social service institution with 47 elderly participants, thus reducing the generalizability of the findings.

Despite these limitations, the implications are noteworthy. Stretching-based group activity therapy is practical, low-cost, and safe, making it a potential routine program for elderly care institutions to prevent and reduce musculoskeletal problems. This program also fosters collaboration between health science students and social service staff, strengthening promotive and preventive care efforts for older adults.

CONCLUSION

The GAT stretching intervention provides strong evidence as a promotive-preventive strategy for musculoskeletal pain, improvement capability activities and emergency risk in older adults. The structured stretching routines, delivered in a supportive group setting, fostered active participation and created a positive atmosphere for sustaining physical health in later life. This integration, along with theoretical mechanisms and empirical support from the literature, provides strong support for the development of effective and sustainable community-based geriatric healthcare services

REFERENCES

Beaudart, C., Tilquin, N., Abramowicz, P., Baptista, F., Peng, D. J., de Souza Orlandi, F., Drey, M., Dzhus, M., Fábrega-Cuadros, R., Fernandez-Garrido, J., Laurindo, L. F., Gasparik, A. I., Geerinck, A., Emin, G., Iacob, S., Kilaitė, J., Kumar, P., Lee, S. C., Lou, V. W. Q., … Bruyère, O. (2024). Quality of life in sarcopenia measured with the SarQoL questionnaire: A meta-analysis of individual patient data. *Maturitas*, *180*(August 2023). https://doi.org/10.1016/j.maturitas.2023.107902

Diaz, M. F. F., Leadbetter, B., Pitre, V., Nowell, S., Sénéchal, M., & Bouchard, D. R. (2024). Synchronous Group-Based Online Exercise Programs for Older Adults Living in the Community: A Scoping Review. *Journal of Aging and Physical Activity*, *32*(6), 703–717. https://doi.org/10.1123/japa.2023-0214

Gandotra, A., Kotyuk, E., Szekely, A., Kasos, K., Csirmaz, L., & Cserjesi, R. (2020). Fundamental movement skills in children with autism spectrum disorder: A systematic review. *Research in Autism Spectrum Disorders*, *78*(January), 101632.

https://doi.org/10.1016/j.rasd.2020.101632

Gough, C., Lewis, L. K., Barr, C., Maeder, A., & George, S. (2021). Community participation of community dwelling older adults: a cross-sectional study. *BMC Public Health*, *21*(1), 1–13. https://doi.org/10.1186/s12889-021-10592-4

Guan-Cheng Zhu PhD, Kuei-Min Chen PhD, & Frank Belcastro PhD. (2024). Comparing Different Stretching Exercises on Pain, Stiffness, and Physical Function Disability in Older Adults With Knee Osteoarthritis. *Archives of Physical Medicine and Rehabilitation*, *105*(5), 953–962. https://doi.org/https://doi.org/10.1016/j.apmr.2023.07.001

Gutiérrez-Valencia, M., Izquierdo, M., Cesari, M., Casas-Herrero, Á., Inzitari, M., & Martínez-Velilla, N. (2021). The role of muscle health in the prevention of hospitalization-associated disability. *Journal of the American Medical Directors Association*, *22*(4), 748–759.

Han, X., Qiao, Y., Tan, J., Luo, Z., Nicholas, S., Maitland, E., Han, L., Xu, Z., & Wang, J. (2025). Social Connection and Chronic Pain: A Cohort Study to Explore the Association of Social Isolation and Loneliness with Chronic Pain Among Older Adults in China. *Journal of Pain Research*, *18*(August), 4187–4199. https://doi.org/10.2147/JPR.S526555

Horgas, A. L., & Elliott, A. F. (2021). Pain in older adults. *Handbook of the Psychology of Aging*, *104*(5), 83–98. https://doi.org/10.1016/B978-0-12-816094-7.00012-X

Kato, M., Green, F. N., Hotta, K., Tsukamoto, T., Kurita, Y., Kubo, A., & Takagi, H. (2020). The efficacy of stretching exercises on arterial stiffness in middle-aged and older adults: A meta-analysis of randomized and non-randomized controlled trials. *International Journal of Environmental Research and Public Health*, *17*(16), 1–15. https://doi.org/10.3390/ijerph17165643

Konrad, A., Nakamura, M., Sardroodian, M., Aboozari, N., Anvar, S. H., & Behm, D. G. (2025). The effects of chronic stretch training on musculoskeletal pain. *European Journal of Applied Physiology*, *0123456789*. https://doi.org/10.1007/s00421-025-05747-9

Kulkarni, N., Tsepis, E., Phalke, V., Tilekar, S., Pouliasi, K., Theodoritsi, M., & Mahajan, A. (2023). A randomized controlled trial on impact of group exercise programme on fall risk, balance, strength, fear of fall and quality of life of older adults. *Journal of Gerontology and Geriatrics*, *71*(2), 47–60. https://doi.org/10.36150/2499-6564-N540

Lohmann, L. H., Zech, A., Plöschberger, G., Oraže, M., Jochum, D., & Warneke, K. (2024). Acute and chronic effects of stretching on balance: a systematic review with multilevel meta-analysis. *Frontiers in Medicine*, *11*(September). https://doi.org/10.3389/fmed.2024.1451180

Ma, W., Chen, H., Yuan, Q., Chen, X., & Li, H. (2025). Global, regional, and national epidemiology of osteoarthritis in working-age individuals: insights from the global burden of disease study 1990–2021. *Scientific Reports*, *15*(1), 1–16. https://doi.org/10.1038/s41598-025-91783-6

Muanjai, P., Chaovalit, S., Luangpon, N., Srijunto, W., Chancharoen, P., Namsawang, J., Prasertsri, P., Kamandulis, S., Venckunas, T., & Boonla, O. (2025). Effectiveness of Home-Based Stretching and Strengthening Training for Improving Flexibility, Strength, and Physical Function in Older Adults with Leg Tightness and/or Suspected Sarcopenia. *Sports*, *13*(3). https://doi.org/10.3390/sports13030065

Nasution, M., & Afiyanti, Y. (2022). Terapi Aktivitas Kelompok sebagai Intervensi Keperawatan Psikososial. *Jurnal Keperawatan Indonesia*, *23*(2), 95–103.

Parlak Baskurt, H., & Yardımcı, H. (2025). Consumptıon of ultra-processed foods can accelerate age-related appearance of sarcopenıa. *Biogerontology*, *26*(3), 1–10.

https://doi.org/10.1007/s10522-025-10253-8

Pinheiro, M. B., Oliveira, J., Bauman, A., Fairhall, N., Kwok, W., & Sherrington, C. (2020). Evidence on physical activity and osteoporosis prevention for people aged 65+ years: a systematic review to inform the WHO guidelines on physical activity and sedentary behaviour. *International Journal of Behavioral Nutrition and Physical Activity*, *17*(1), 1–9. https://doi.org/10.1186/s12966-020-01040-4

Ponnampalam, J., Seligmann, G., Gandhi, T., & Parmar, D. (2020). Letter to the Editor in response to Chen et al. 2020. *Respiratory Research*, *21*(1), 20–22. https://doi.org/10.1186/s12931-020-01548-0

Rizkiyani, D., & Puspitasari, M. (2021). Pengaruh Terapi Aktivitas Kelompok terhadap Interaksi Sosial Lansia di Panti Wredha. *Jurnal Keperawatan Dan Kesehatan Masyarakat Cendekia Utama*, *10*(1), 1–7.

Santos, A. C. G., Caiado, V. da S., Moreira-Marconi, E., Teixeira-Silva, Y., De Meirelles, A. G., Seixas, A., Lacerda, A. C. R., Sonza, A., Mendonça, V. A., Bernardo-Filho, M., & De Sá-Caputo, D. da C. (2024). The Influence of Physical Exercises on the Flexibility of Older Individuals with Knee Osteoarthritis: A Systematic Review. *Iranian Journal of Public Health*, *53*(2), 255–267. https://doi.org/10.18502/ijph.v53i2.14911

Sherrington, C., Fairhall, N., Wallbank, G., Tiedemann, A., Michaleff, Z. A., Howard, K., Clemson, L., Hopewell, S., & Lamb, S. (2020). Exercise for preventing falls in older people living in the community: An abridged Cochrane systematic review. *British Journal of Sports Medicine*, *54*(15), 885–891. https://doi.org/10.1136/bjsports-2019-101512

Støve, M. P., Thomsen, J. L., Magnusson, S. P., & Riis, A. (2024). The effect of six-week regular stretching exercises on regional and distant pain sensitivity: an experimental longitudinal study on healthy adults. *BMC Sports Science, Medicine and Rehabilitation*, *16*(1). https://doi.org/10.1186/s13102-024-00995-2

Susilawati, N. Y., Isnaeni, Y., & Salmiyati, S. (2025). *Pengaruh stretching terhadap nyeri sendi dan asam urat pada lansia di Posyandu Brotowali II Mantrijeron Yogyakarta The effect of stretching on joint pain and uric acid in the elderly at Posyandu Brotowali II Mantrijeron Yogyakarta*. *3*(2019), 1274–1281.

Vaishya, R., & Vaish, A. (2020). Falls in Older Adults are Serious. *Indian Journal of Orthopaedics*, *54*(1), 69–74. https://doi.org/10.1007/s43465-019-00037-x

Wakale, S., Wu, X., Sonar, Y., Sun, A., Fan, X., Crawford, R., & Prasadam, I. (2023). How are Aging and Osteoarthritis Related? *Aging and Disease*, *14*(3), 592–604. https://doi.org/10.14336/AD.2022.0831

Warneke, K., Thomas, E., Blazevich, A. J., Afonso, J., Behm, D. G., Marchetti, P. H., Trajano, G. S., Nakamura, M., Ayala, F., Longo, S., Babault, N., Freitas, S. R., Costa, P. B., Konrad, A., Nordez, A., Nelson, A., Zech, A., Kay, A. D., Donti, O., & Wilke, J. (2025). Practical recommendations on stretching exercise: A Delphi consensus statement of international research experts. *Journal of Sport and Health Science*, 101067. https://doi.org/10.1016/j.jshs.2025.101067

WHO. (2022). *Muskuloskeletal Health*. https://www.who.int/news-room/fact-sheets/detail/musculoskeletal-conditions%0A%0A