

DAFTAR PUSTAKA

1. Hussain SM, Neilly DW. Baliga, S. Knee osteoarthritis : a review of management options. *Scottish Medical Journal*. 2016; 61(1): 7-16.
2. Anna A, Elena M.I. Effectiveness of High Intensity Laser Therapy for Reduction of Pain in Knee Osteoarthritis. *Hindawi Publishing Corporation Pain Research and Management*. 2016; 11 : 1-10.
3. Delisa, J. Osteoarthritis. In : *Delisa's Physical Medicine & Rehabilitation Principles and Practice*, 5th edition. Philadelphia : Lippincott williams & wilkins, 2010; 781-801 p.
4. Cucurullo SJ. Osteoarthritis. In : *Physical Medicine and Rehabilitation Board Review*, 2nd edition. New Jersey : Demos medical, 2010; 108-11 p.
5. Kemenkes RI. Riset kesehatan dasar - Riskesdas 2013. Badan penelitian dan pengembangan kesehatan kementerian kesehatan RI tahun 2013; 120-24 p.
6. Ayling S, Gessal J. Gambaran Faktor Risiko Penderita Osteoarthritis Lutut di Instalasi Rehabilitasi Medik RSUP Prof. Dr. R. D. Kandou Manado Periode Januari –Juni 2017. Manado : Universitas Samratulangi; 2017.
7. Sifta P, Danilov D. Effects of high- intensity laser on gonarthrosis. *Energy for Health Journal*. 2015; 18-22.
8. Mohamed SM, Abdel KM. Efficacy of high intensity laser therapy in the treatment of male with osteopenia or osteoporosis: a randomized placebo- controlled trial. *The Journal of Physical Therapy Science*. 2017; 29(9): 1675-78.
9. Konggres Nasional Ikatan Reumatologi Indonesia VI. <http://pemda-diy.go.id/berita>, 2005, 10:21:40.
10. *Riset Kesehatan Dasar (Riskesdas)*. 2013. *Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan RI. Penyakit Tidak Menular: Sendi/Rematik/Encok*. 94-9

11. *Pusat Data dan Informasi Kementerian Kesehatan RI, 2013. Gambaran Kesehatan Lanjut Usia di Indonesia*
12. Zhang Y., Jordan J. M., 2010. *Epidemiology of Osteoarthritis. Clin Geriatr Med. 26(3): 355–369*
13. Murphy L., Helmick C.G., 2012. *The Impact of Osteoarthritis in the United States: A Population-Health Perspective. American Journal of Nursing. Vol. 112: 3*
14. *Center for Disease Control and Prevention (CDC): Osteoarthritis. <http://www.cdc.gov/arthritis/basics/osteoarthritis.html>.*
15. Sjahmuhidajat R., Karnadihardja W., Prasetyono T. O. H., Rudiman R., 2011. *Buku ajar ilmu bedah sjahmuhidajat- de jong, Ed. 3. Jakarta, EGC, 1006-8*
16. Murray C.J.L., Lopez A.D. *The Global Burden of Disease. Geneva : World Health Organization, 1996 : 1 – 3.*
17. Altman R.D. *Criteria for the Classification of Osteoarthritis. Journal of Rheumatology, 1991; 27 (suppl): 10 – 12.*
18. Setiyohadi Bambang. *Osteoarthritis Selayang Pandang. Dalam Temu Ilmiah Reumatologi. Jakarta, 2003: 27 – 31.*
19. Soeroso J, Isbagio H, Kalim H, Broto R, Pramudiyo R. Osteoarthritis. In: Sudoyo AW, Setiyohadi B, Alwi I, Simadibrata M, Setiati S, editors. *Buku ajar ilmu penyakit dalam. 4th ed. Jakarta: Pusat Penerbitan Ilmu Penyakit Dalam Fakultas Kedokteran Universitas Indonesia; 2006. p. 1195-1201.*
20. Sadhana, Udadi. *Patologi anatomi 2. Semarang: Badan Penerbit Universitas Diponegoro Semarang; 2011.*
21. Firestein Gary S, Ralph C. Budd, Edward D. Harris, Iain B. McInnes, Shaun Ruddy, John S. Sargent. *Kelley's textbook of rheumatology 8th edition volume II. Canada: Saunders Elsevier; 2009.*
22. Maharani, Eka Pratiwi. *Faktor-faktor risiko osteoarthritis lutut. Semarang: Universitas Diponegoro Semarang; 2007.*
23. Soejoto, Soetedjo, Sultana MH Faradz, RB Bambang W, Neni Susilaningsih, Ratna D Purnawati et al. *Lecture notes histologi I.*

Semarang: Bagian Histologi Fakultas Kedokteran Universitas Diponegoro Semarang; 2011

24. Price, Sylvia A, Lorraine M. Wilson. *Patofisiologi konsep klinis proses- proses penyakit edisi 6. Jakarta: EGC; 2003.*
25. Firestein Gary S, Ralph C.Budd, Edward D. Harris, Iain B.McInnes, Shaun Ruddy, John S.Sergent. *Kelley's textbook of rheumatology 8th edition volume II. Canada: Saunders Elsevier; 2009.*
26. JF, Woessner, Gunja-Smith Z. *Role of metalloproteinases in human osteoarthritis. J Rheumatol Suppl. 1991; 27:99-101.*
27. Bergman RA, Afifi KA, Heidger Jr PM. *Histology. Philadelphia: WB Saunders Company, 1996.*
28. Cormack DH. *Ham's Histology (Ninth Edition). Philadelphia: JB Lippincott Company, 1987.*
29. Fawcett DW. *Bloom and Fawcett: A Textbook of Histology (Twelfth Edition). New York: Chapman & Hall, 1994.*
30. Kessel RG. *Basic Medical Histology. The biology of Cells, Tissues, and Organs. New York: Oxford University Press, 1998.*
31. McKenzie JC, Klein RM. *Basic Concepts in Cell Biology and Histology. A Student's Survival Guide. New York: McGraw-Hill, 2000.*
32. Poole A.R. *Cartilage in Health and Disease. In: Arthritis and Allied Conditions. Text Book of Rheumatology. 4th Edition. Editor Koopman W.J. Lippincot Williams & Wilkins. Philadelphia, 2001: 226 – 284.*
33. Palletier, J.M. and Palletier J.P. *Effect of Aceclogenac and Diclofenac on Inflammatory in Human Osteoarthritis. Clinical Drugs Investigation, 1997; 14 (3): 326 – 332.*
34. Klippel John H., Dieppe Paul A., Brooks Peter, *et al.* Osteoarthritis. *In: Rheumatology. United Kingdom: Mosby – Year Book Europe Limited, 1994: 2.1 – 10.6.*
35. Felson D.T, Zhang Y., Hannan M.T., *et al.* The Incidence and Natural History of Knee Osteoarthritis in the Elderly: The Framingham Osteoarthritis Study. *Arthritis Rheumatology; 1995; 38: 1500 – 1505.*

36. Kraus V.B. Pathogenesis and Treatment of Osteoarthritis. *Med Clin North Am*, 1997; 81: 85 – 112.
37. Pay Y.C., Rymer W.Z., Chang R.W., *et al.* Effect of Age and Osteoarthritis on Knee Proprioception. *Arthritis Rheumatology*, 1997; 40: 2260 – 2265.
38. Felson D.T., Zhang Y. An Update on the Epidemiology of Knee and Hip Osteoarthritis with a View to Prevention. *Arthritis Rheumatology*, 1998; 41: 1343 – 1355.
39. Abbate L., Renner J.B, Stevens J., *et al.* Do Body Composition and Body Fat Distribution Explain Ethnic Differences in Radiographic Knee Osteoarthritis Outcomes in African -American and Caucasian Women? *The North American Association for the Study of Obesity*, 2006; 14: 1274 – 1281.
40. Amin, Niu Jingbo, Hunter David, *et al.* Smoking Worsens Knee Osteoarthritis. *News Center Oklahoma City, Oklahoma USA*, 2006: 1 – 4.
41. Felson D.T., Osteoarthritis New Insights. Part 1: The Disease and Its Risk Factors. *Ann Intern Med*, 2000; 133: 637 – 639.
42. Englund M. and Lohmander L.S. Patellofemoral Osteoarthritis Coexistent with Tibiofemoral Osteoarthritis in a Meniscectomy Population. *Annals of the Rheumatic Diseases*, 2005; 64: 1721 – 1726.
43. Englund M., Roos E.M., Roos H.P., Lohmander L.S. Patient-Relevant Outcomes Fourteen Years after Meniscectomy: Influence of Type of Meniscal Tear and Size of Resection. *Rheumatology*, 2001; 40: 631 – 639.
44. Hunter D.J., March L., Sambrook P.N. Knee Osteoarthritis: The Influence of Environmental Factors. *Clinical Exp Rheumatology*, 2002; 20: 93 – 100.
45. Maetzel A., Makela M., Hawker G., *et al.* Osteoarthritis of the Hip and Knee and Mechanical Occupational Exposure: A Systematic Overview of the Evidence, 1997; 24 : 599 – 607.

46. Lau E.C., Cooper C., Lam D., Chan V.N.H., Tsang K.K., Sham A. Factors Associated with Osteoarthritis of the Hip and Knee in Hong Kong Chinese: Obesity, Joint Injury, and Occupational Activities. *American Journal Epidemiology*, 2000; 152: 855 – 862.
47. Oliveria S.A., Felson D.T., Reed J.L., *et al.* Incidence of Symptomatic Hand, Hip and Knee Osteoarthritis among Patients in a Health Maintenance Organization. *Arthritis Rheum*, 1995; 38: 1134 – 1141.
48. Moskowitz, Roland W., David S. Howell, Roy D. Altman, Joseph A. Buckwalter, Victor M. Goldberg. *Osteoarthritis 3rd edition diagnosis and medical / surgical management. Philadelphia: W.B. Saunders Company; 2001.*
49. Adnan HM. *Diagnosis arthritis rheumatoid dan perbandingannya arthritis- arthritis lain. Kongres Nasional I, Ikatan Reumatologi Indonesia, Semarang, 1983: 43-57.*
50. Creamer P., Hochberg M. Osteoarthritis. *Lancet*, 1997; 350: 503 – 508.
51. Iain B. McInnes & Georg Schett, *cytokines in the pathogenesis of rheumatoid arthritis. Nature review immunology 7 June 2007 : 429 – 442*
52. Rhee DK, Marcelino J, Baker M, Gong Y, Smits P, Lefebvre V, *et al.* The secreted glycoprotein lubricin protects cartilage surfaces and inhibits synovial cell overgrowth. *J Clin Invest.* 2005;115(3):622–31
53. Sobol *et al.*: Laser-induced regeneration of cartilage. *Journal of Biomedical Optics* 16(8), 080902 (August 2011)
54. Lau E.C., Cooper C., Lam D., Chan V.N.H., Tsang K.K., Sham A. Factors Associated with Osteoarthritis of the Hip and Knee in Hong Kong Chinese: Obesity, Joint Injury, and Occupational Activities. *American Journal Epidemiology*, 2000; 152: 855 – 862.
55. Haq I., Murphy E., Dacre J. Osteoarthritis Review. *Postgrad Med J*, 2003; 79 : 377 – 383.

56. Schmidt RB, Thomsen M, Niedhart C, Wirtz DC, Schneider U. Correlation of bone and cartilage markers in the synovial fluid with the degree of osteoarthritis. *Rheumatol Int* 2002 Mar ; 21 (5), p 193-9.
57. Callahan LF et al Public Health Interventions for Osteoarthritis - updates on the Osteoarthritis Action Alliance's efforts to address the 2010 OA Public Health Agenda Recommendations. *Clin Exp Rheumatol* 2019 Sep-Oct: 37 Suppl 120 (5): p.31-39.
58. Angelova A, Ilieva EM. Effectiveness of High Intensity Laser Therapy for Reduction of Pain in Knee Osteoarthritis. *Pain Res Management* 2016.
59. Bennell KL¹, Hinman RS. A review of the clinical evidence for exercise in osteoarthritis of the hip and knee. *J Sci Med Sport*. 2011 Jan;14(1), p 4-9.
60. DeLisa, J.A, Gans ,B,M and Walsh N,E, 2005 .DeLisa's Physical Medicine and Rehabilitation: Principles and Practice, Lippincott Williams and Wilkins , p 782.
61. H Isbagio. Struktur rawan sendi dan perubahannya pada osteoarthritis <http://www.kalbe.co.id>. Accessed December, 2000
62. Anthony L. Mescher. Junqueira's Basic Histology: Text and Atlas, Fifteenth Edition, 2018, McGraw-Hill Education.
63. Baxter GD. 1994. Therapeutic Laser theory and practice. Singapore: Loughman Singapore publisher
64. Kert J, Rose L. Clinical laser therapy low level laser therapy. Denmark: Scandinavian medical laser technology. 1989
65. Hamblin MR. Mechanism of low level light therapy. Boston: Department of Dermatology, Harvard Medical School; 2008.
66. J.C. Sutherland, Biological effects of polychromatic light, *Photochem Photobiol* 76 (2002) 164-70
67. T. Karu, Laser biostimulation: a photobiological phenomenon, *J Photochem Photobiol B* 3 (1989) 638-40

68. H. Friedmann, R. Lubart, I. Laulicht and S. Rochkind, A possible explanation of laser-induced stimulation and damage of cell cultures, *J Photochem Photobiol B* 11 (1991) 87-91
69. M. Eichler, R. Lavi, A. Shainberg and R. Lubart, Flavins are source of visible-light-induced free radical formation in cells, *Lasers Surg Med* 37 (2005) 314-9 6
70. K. Plaetzer, T. Kiesslich, B. Krammer and P. Hammerl, Characterization of the cell death modes and the associated changes in cellular energy supply in response to AIPcS4-PDT, *Photochem Photobiol Sci* 1 (2002) 172-7 7
71. T.I. Karu and N.I. Afanas'eva, Cytochrome c oxidase as the primary photoacceptor upon laser exposure of cultured cells to visible and near IR-range light, *Dokl Akad Nauk* 342 (1995) 693-5
72. R.A. Capaldi, F. Malatesta and V.M. Darley-Usmar, Structure of cytochrome c oxidase, *Biochim Biophys Acta* 726 (1983) 135-48
73. T.I. Karu and S.F. Kolyakov, Exact action spectra for cellular responses relevant to phototherapy, *Photomed Laser Surg* 23 (2005) 355-61
74. D. Pastore, M. Greco and S. Passarella, Specific helium-neon laser sensitivity of the purified cytochrome c oxidase, *Int J Radiat Biol* 76 (2000) 863-70
75. V.G. Artyukhov, O.V. Basharina, A.A. Pantak and L.S. Sveklo, Effect of helium-neon laser on activity and optical properties of catalase, *Bull Exp Biol Med* 129 (2000) 537-40
76. Yu, J.O. Naim, M. McGowan, K. Ippolito and R.J. Lanzafame, Photomodulation of oxidative metabolism and electron chain enzymes in rat liver mitochondria, *Photochem Photobiol* 66 (1997) 866-71
77. S. Passarella, He-Ne laser irradiation of isolated mitochondria, *J Photochem Photobiol B* 3 (1989) 642-3
78. Y. Zhang, S. Song, C.C. Fong, C.H. Tsang, Z. Yang and M. Yang, cDNA microarray analysis of gene expression profiles in human

- fibroblast cells irradiated with red light, *J Invest Dermatol* 120 (2003) 849-57
79. Kert J, Rose L. *Clinical laser therapy low level laser therapy*. Denmark: Scandinavian medical laser technology. 1989
 80. Avadhanulu M.N. *An introduction to LASERS theory and applications*. New Delhi; S. Chand & Company Ltd. 2001
 81. Snyder-mackler L, Sertz L. *Therapeutic uses of light in rehabilitation*. In: Michlovitz SL ed. *Thermal agents in rehabilitation*. 2nd ed. Philadelphia: FA Davis Co. 1996; 9:200
 82. Basford JR. *Physical agents*. In: DeLisa JA, Gans BM eds. *Physical medicine and rehabilitation: principles and practice*. 3rd ed. Philadelphia: JB Lippincott Co. 1998; 20: 483-500
 83. Murdana N. *Terapi laser dalam penatalaksanaan kasus rehabilitasi medis*. In: *kursus dasar kedokteran laser & aplikasi laser bidang kedokteran*. Jakarta. 2008
 84. Cornain S. *Laser/Photodynamic therapy: immunological aspects*. In: *Kursus dasar kedokteran laser & aplikasi laser bidang kedokteran*. Jakarta. 2008.
 85. J.T. Eells, M.M. Henry, P. Summerfelt, M.T. Wong-Riley, E.V. Buchmann, M. Kane, N.T. Whelan and H.T. Whelan, *Therapeutic photobiomodulation for methanol-induced retinal toxicity*, *Proc Natl Acad Sci U S A* 100 (2003) 3439-44
 86. Kheshie RA, Alayat MS, Ebrahim MM. *High-intensity versus low-level laser therapy in the treatment of patients with knee osteoarthritis: a randomized controlled trial*. *Lasers Med Sci*. 2014; 29 : 1371-76.
 87. Ceuninck FD, Sabatini M. *Cartilage and Osteoarthritis Volume 2. Structure and In Vivo Analysis*. New Jersey : Humana Press Inc. 2014; 39-105 p.
 88. Kulchitskaya DB, Konchugova TV, et al. *Comparative evaluation of the effects of high-intensity and low-intensity laser radiation on*

- icrocirculation among patients with knee arthritis. *Journal of Physics*. 2017; 16(1): 1-4.
89. Rogoznica N, Doris S, et al. Analgesic Effect of High Intensity Laser Therapy in Knee Osteoarthritis. *Coll. Antropol*. 2014; 2: 183-85.
90. Viliani T., Martini C., Mangone. "High intensity laser therapy in knee osteoarthritis: comparison between two different pulsed-laser treatment protocols". *Energy for Health Journal*. 2015; 05: 26-9.
91. Tuner J and Hode L. *The Laser Therapy Handbook*. Prima Books. 2004. Sweden. p 43.
92. Niemz M. *Laser-Tissue Interactions-Fundamentals and Applications*. 3rd. Berlin, Germany: Springer; 2007.
93. The Asia Pacific perspective: Redefining obesity and its treatment. Regional Office for the Western Pacific of the World Health Organization. World Health Organization, International Association for the Study of Obesity and International Obesity Task Force, Australia; 2000
94. Angelova A, Ilieva EM. Effectiveness of high intensity laser therapy for reduction of pain in knee osteoarthritis. *Pain Res Manag*. 2016;2016.
95. Iqbal SM, Leonard C, Regmi SC, De Rantere D, Tailor P, Ren G, et al. Lubricin/Proteoglycan 4 binds to and regulates the activity of Toll-Like Receptors in Vitro. *Sci Rep*. 2016;6:1–12.
96. Damen AHA, van Donkelaar CC, Cardinaels RM, Brandt JM, Schmidt TA, Ito K. Proteoglycan 4 reduces friction more than other synovial fluid components for both cartilage-cartilage and cartilage-metal articulation. *Osteoarthr Cartil*. 2021;29(6):894–904.
97. Suryo S. Uji Inter-Rater Reliability Western Ontario and McMaster University (WOMAC) Osteoarthritis Index pada Pasien Osteoarthritis Knee. *J Kesehatan*. 2020;5(2):131–5.
98. Shantanam S, MUELLER. Lubricin/proteoglycan 4 increases in both experimental and naturally occurring equine osteoarthritis HHS Public Access. *Physiol Behav*. 2018;176(1):139–48.

99. Abubacker S, Premnath P, Shonak A, Leonard C, Shah S, Zhu Y, et al. Absence of Proteoglycan 4 (Prg4) Leads to Increased Subchondral Bone Porosity Which Can Be Mitigated Through Intra-Articular Injection of PRG4. *J Orthop Res.* 2019;37(10):2077–88.
100. Ezzati K, Laakso EL, Salari A, Hasannejad A, Fekrazad R, Aris A. The beneficial effects of high-intensity laser therapy and co-interventions on musculoskeletal pain management: A systematic review. *J Lasers Med Sci.*
101. Angelova A, Ilieva EM. Effectiveness of high intensity laser therapy for reduction of pain in knee osteoarthritis. *Pain Res Manag.* 2016;2016.
102. Setia W, Nyoman M, Nury N. The Comparison of The Low-Level Laser Therapy and High Intensity Laser Therapy on Pain and Functional Ability in Knee Osteoarthritis. *Physical Medicine Rehabilitation.* Jakarta. 2022.

Lampiran 1. Lampiran Kaji Etik

**REKOMENDASI PERSETUJUAN ETIK**

Nomor : 77/UN4.6.4.5.31/PP36/2023

Tanggal: 31 Januari 2023

Dengan ini Menyatakan bahwa Protokol dan Dokumen yang Berhubungan Dengan Protokol berikut ini telah mendapatkan Persetujuan Etik :

No Protokol	UH23010004		No Sponsor Protokol	
Peneliti Utama	dr. Mohammad Adib Khumaidi, Sp.OT		Sponsor	
Judul Peneliti	Analisis ekspresi mRNA gen proteoglycan 4 (PRG 4) terhadap perbaikan nyeri dan kemampuan fungsional pada penderita osteoarthritis (OA) setelah pemberian High Intensity Laser			
No Versi Protokol	1	Tanggal Versi	2 Januari 2023	
No Versi PSP	1	Tanggal Versi	2 Januari 2023	
Tempat Penelitian	RSUD Cengkareng Jakarta Barat			
Jenis Review	<input type="checkbox"/> Exempted	Masa Berlaku	31 Januari 2023	Frekuensi review lanjutan
	<input checked="" type="checkbox"/> Expedited	sampai	31 Januari 2024	
	<input type="checkbox"/> Fullboard Tanggal			
Ketua KEP Universitas Hasanuddin	Nama	Prof.Dr.dr. Suryani As'ad, M.Sc.,Sp.GK (K)		Tanda tangan
Sekretaris KEP Universitas Hasanuddin	Nama	dr. Agussalim Bukhari, M.Med.,Ph.D.,Sp.GK (K)		Tanda tangan

Kewajiban Peneliti Utama:

- Menyerahkan Amandemen Protokol untuk persetujuan sebelum di implementasikan
- Menyerahkan Laporan SAE ke Komisi Etik dalam 24 Jam dan dilengkapi dalam 7 hari dan Laporan SUSAR dalam 72 Jam setelah Peneliti Utama menerima laporan
- Menyerahkan Laporan Kemajuan (progress report) setiap 6 bulan untuk penelitian resiko tinggi dan setiap setahun untuk penelitian resiko rendah
- Menyerahkan laporan akhir setelah Penelitian berakhir
- Melaporkan penyimpangan dari prokol yang disetujui (protocol deviation / violation)
- Mematuhi semua peraturan yang ditentukan

Lampiran 2. Lembar Informasi dan Persetujuan Subjek Penelitian

FORMULIR PERSETUJUAN SETELAH PENJELASAN (INFORMED CONSENT)

Saya yang bertanda tangan di bawah ini:

Nama:

Umur:

Pekerjaan :

Alamat:

Telah mendapat penjelasan secara lengkap mengenai penelitian yang berjudul **ANALISA EKSPRESI mRNA GEN PROTEOGLYCAN 4 (PRG4) PADA PENDERITA OSTEOARTHRITIS (OA) SETELAH PEMBERIAN LASER BIOSTIMULAN KORELASI DENGAN PERBAIKAN NYERI DAN KEMAMPUAN FUNGSIONAL DALAM NUMERIC PAIN RATING SCALE (NPRS) DAN WESTERN ONTARIO AND MCMASTER UNIVERSITIES OSTEOARTHRITIS INDEX (WOMAC)** Di RSUD Cengkaeng serta saya memahaminya, saya dengan penuh kesadaran dan tanpa paksaan menyatakan bersedia/tidak bersedia* berpartisipasi pada penelitian ini.

(*Corer yang tidak perlu)

....., 2022

Yang membuat pernyataan

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Lampiran 3. Lembar Kuisisioner/Pengambilan Data (Numeric Rating Scale Pre-Intervensi)

Kuesioner Numeric Rating Scale

SKALA NYERI SEBELUM INTERVENSI DILAKUKAN

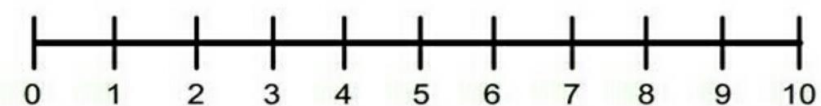
Petunjuk :

Pada skala ini diisi oleh peneliti setelah responden menunjukkan angka berapa nyeri yang dirasakan dengan menggunakan skala nyeri *Numeric Rating Scale* (0-10) yaitu:

1. 0 : Tidak nyeri
2. 1-3 : Nyeri ringan
3. 4-6 : Nyeri sedang
4. 7-10 : Nyeri berat

Tanyakan kepada responden pada angka berapa nyeri yang dirasakannya dengan menunjukkan posisi garis yang sesuai untuk menggambarkan nyeri yang dirasakan oleh responden sebelum intervensi dilakukan dengan membuat tanda (X) pada skala yang telah disediakan.

Sebelum dilakukan tindakan (intervensi)



Lampiran 4. Lembar Kuisisioner/Pengambilan Data (Numeric Rating Scale Post Intervensi)

SKALA NYERI SETELAH INTERVENSI DILAKUKAN

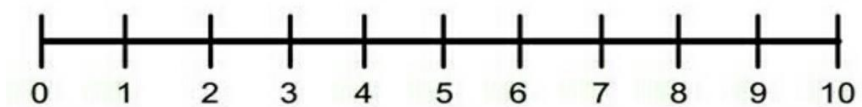
Petunjuk :

Pada skala ini diisi oleh peneliti setelah responden menunjukkan angka berapa nyeri yang dirasakan dengan menggunakan skala nyeri *Numerik Rating Scale* (0 - 10) yaitu:

1. 0 : Tidak nyeri
2. 1-3 : Nyeri ringan
3. 4-6 : Nyeri sedang
4. 7-10 : Nyeri berat

Tanyakan kepada responden pada angka berapa nyeri yang dirasakannya dengan menunjukkan posisi garis yang sesuai untuk menggambarkan nyeri yang dirasakan oleh responden sebelum intervensi dilakukan dengan membuat tanda (X) pada skala yang telah disediakan.

Setelah dilakukan tindakan (intervensi)



Lampiran 5. Lembar Kuisisioner/Pengambilan Data (WOMAC)**Kuesioner WOMAC**

Identitas ;

Tanggal :

Nama :

Usia :

Jenis Kelamin :

Berat Badan :

Tinggi Badan :

Pekerjaan :

Merokok : Ya / Tidak (coret yang tidak perlu)

Nyeri	1.	Berjalan	0	1	2	3	4	
	2.	Menaiki tangga	0	1	2	3	4	
	3.	Pada malam hari	0	1	2	3	4	
	4.	Saat istirahat	0	1	2	3	4	
	5.	Membawa beban	0	1	2	3	4	
Jumlah								
Kekakuan	1.	Kekakuan di pagi hari	0	1	2	3	4	
	2.	Kekakuan yang terjadi di kemudian Hari	0	1	2	3	4	
Jumlah								
Fungsi fisik	1.	Menuruni tangga	0	1	2	3	4	
	2.	Menaiki tangga	0	1	2	3	4	
	3.	Berdiri dari duduk	0	1	2	3	4	
	4.	Berdiri	0	1	2	3	4	
	5.	Berbelok di lantai	0	1	2	3	4	
	6.	Berjalan di atas permukaan yang datar	0	1	2	3	4	
	7.	Masuk atau keluar mobil	0	1	2	3	4	
	8.	Pergi berbelanja	0	1	2	3	4	
	9.	Menaruh kaos kaki	0	1	2	3	4	
	10.	Berbaring di tempat tidur	0	1	2	3	4	
	11.	Membuka/mengambil kaos kaki	0	1	2	3	4	
	12.	Bangkit dari tempat tidur	0	1	2	3	4	

	13.	Masuk/keluar bak tempat mandi	0	1	2	3	4	
	14.	Duduk	0	1	2	3	4	
	15.	Keluar/masuk toilet	0	1	2	3	4	
	16.	Melakukan tugas rumah tangga ringan	0	1	2	3	4	
	17.	Melakukan tugas rumah tangga berat	0	1	2	3	4	
	Jumlah							
	Jumlah Total							

0=tidak ada, 1=ringan, 2=sedang, 3=berat, 4=sangat berat

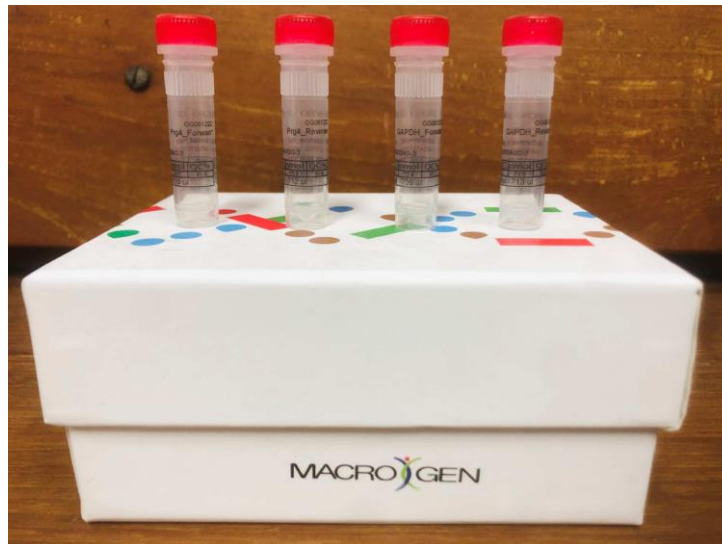
Interpretasi Nilai WOMAC

Jenis Pemeriksaan	Total Skor	Keterangan
Nyeri	0 20	Minimum Maksimum
Kekakuan	0 8	Minimum Maksimum
Fungsi Fisik	0 68	Minimum Maksimum
Total	96	Maksimum Skor

Interpretasi Total Skor WOMAC

Total Skor WOMAC	Interpretasi
0-24	Ringan
24-48	Sedang
48-72	Berat
72-96	Sangat Berat

Lampiran 6. Dokumentasi Proses Penelitian



Gambar 22. Primer RTPCR Gen Mouse Prg4 / Housekeeping Gen GAPDH

oligo
MACROGEN
Advanced Oligo Services

Mochammad Hatta
BTN ANTARA B66,
Perintis Kemerdekaan, Km 9
90245

OG061222
Order date : 2022/12/06
Packing date : 2022/12/09
Page : 1 / 1

Oligo Prg4_Forward							
SEQ 5-TCCCATGCTTCCGATGAGAC-3'							
GC%	MW		Yield		scale (umoles)	Tm(°)	[Graph]
	calculated	measured	OD	nmol			
50.5	8.132,1	8.132,8	7.1	25.1	0.2	65.2	
vol. for 100pmol/ul		Purification		Modification			
715		MOPC					
Oligo Prg4_Reverse							
SEQ 5-ATTCTGCGAGCTGGAGATGG-3'							
GC%	MW		Yield		scale (umoles)	Tm(°)	[Graph]
	calculated	measured	OD	nmol			
50.9	8.117,8	8.126,2	7.2	25.6	0.2	63.7	
vol. for 100pmol/ul		Purification		Modification			
712		MOPC					
Oligo GAPDH_Forward							
SEQ 5-CACCATCTCCAGGAGCGAG-3'							
GC%	MW		Yield		scale (umoles)	Tm(°)	[Graph]
	calculated	measured	OD	nmol			
50.2	8.058,2	8.026,3	6.7	24.6	0.2	63.8	
vol. for 100pmol/ul		Purification		Modification			
709		MOPC					
Oligo GAPDH_Reverse							
SEQ 5-GACTCCAGGACTACTCAGC-3'							
GC%	MW		Yield		scale (umoles)	Tm(°)	[Graph]
	calculated	measured	OD	nmol			
50.2	8.058,2	8.026,3	6.7	24.6	0.2	63.8	
vol. for 100pmol/ul		Purification		Modification			
709		MOPC					

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Gambar 23. Primer sheet RTPCR Gen Mouse Prg4 / Housekeeping Gen GAPDH



Gambar 24. PCR Master Mix SYBR Green



Gambar 25. Making of PCRMix



Gambar 26. Nanodrop or measure DNA Template



Gambar 27. Put the template into the tube of PCR Mix



Gambar 28. PCR Machine



Gambar 29. Analyze RTPCR Result

Lampiran 7. Data SPSS

Data Demografik

		Intv							
		Intervensi				Kontrol			
		Count	Column N %	Mean	Standard Deviation	Count	Column N %	Mean	Standard Deviation
Sex	Laki laki	6	20.0%			4	13.3%		
	Perempuan	24	80.0%			26	86.7%		
Usia				60.1	5.08			55.8	5.55
TB				156.1	9.18			155.3	7.76
BB				63.2	11.82			66.8	12.65
IMT				25.8	3.33			27.7	4.72
IMT_cat	2.00	8	26.7%			4	13.3%		
	3.00	4	13.3%			4	13.3%		
	4.00	14	46.7%			12	40.0%		
	5.00	4	13.3%			10	33.3%		

Uji homogenitas

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Sex	1.914	1	58	.172
Usia	.099	1	58	.754
TB	.136	1	58	.714
BB	.115	1	58	.736
IMT	2.901	1	58	.094
IMT_cat	.919	1	58	.342

Perbandingan nilai Ekspresi mRNA, NPRS, WOMAC pada minggu ke-1 dan ke 4

Kelompok intervensi

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	mRNA_M1	1.08092	30	.428419	.078218
	mRNA_M4	5.58582	30	1.687946	.308175
Pair 2	WOMAC_M1	48.20	30	12.797	2.336
	WOMAC_M4	43.87	30	13.472	2.460

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	mRNA_M1 & mRNA_M4	30	.048	.800
Pair 2	WOMAC_M1 & WOMAC_M4	30	.985	.000

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	mRNA_M1 - mRNA_M4	-4.504901	1.721290	.314263	-5.147641	-3.862161	-14.335	29	.000
Pair 2	WOMAC_M1 - WOMAC_M4	4.333	2.397	.438	3.438	5.229	9.901	29	.000

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum	Percentiles		
						25th	50th (Median)	75th
NPRS_M1	30	5.43	1.006	3	7	5.00	5.00	6.00
NPRS_M4	30	3.90	1.062	2	6	3.00	4.00	5.00

Ranks

		N	Mean Rank	Sum of Ranks
NPRS_M4 - NPRS_M1	Negative Ranks	28 ^a	14.50	406.00
	Positive Ranks	0 ^b	.00	.00
	Ties	2 ^c		
	Total	30		

- a. NPRS_M4 < NPRS_M1
b. NPRS_M4 > NPRS_M1
c. NPRS_M4 = NPRS_M1

Test Statistics^a

	NPRS_M4 - NPRS_M1
Z	-4.724 ^b
Asymp. Sig. (2-tailed)	.000

- a. Wilcoxon Signed Ranks Test
b. Based on positive ranks.

Kelompok kontrol

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum	Percentiles		
						25th	50th (Median)	75th
mRNA_M1	30	1.09105	.470067	.505	2.059	.66858	1.05736	1.33483
NPRS_M1	30	5.83	1.234	3	8	5.00	6.00	7.00
mRNA_M4	30	4.30146	1.860133	.864	8.646	3.12033	3.87894	5.30153
NPRS_M4	30	5.30	1.489	2	8	4.00	6.00	6.00

Ranks

		N	Mean Rank	Sum of Ranks
mRNA_M4 - mRNA_M1	Negative Ranks	0 ^a	.00	.00
	Positive Ranks	30 ^b	15.50	465.00
	Ties	0 ^c		
	Total	30		
NPRS_M4 - NPRS_M1	Negative Ranks	11 ^d	6.00	66.00
	Positive Ranks	0 ^e	.00	.00
	Ties	19 ^f		
	Total	30		

a. mRNA_M4 < mRNA_M1

b. mRNA_M4 > mRNA_M1

c. mRNA_M4 = mRNA_M1

d. NPRS_M4 < NPRS_M1

e. NPRS_M4 > NPRS_M1

f. NPRS_M4 = NPRS_M1

Test Statistics^a

	mRNA_M4 - mRNA_M1	NPRS_M4 - NPRS_M1
Z	-4.782 ^b	-3.066 ^c
Asymp. Sig. (2-tailed)	.000	.002

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

c. Based on positive ranks.

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	WOMAC_M1	36.97	30	18.110	3.306
	WOMAC_M4	35.00	30	19.439	3.549

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	WOMAC_M1 & WOMAC_M4	30	.991	.000

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference					
				Lower	Upper				
Pair 1	WOMAC_M1 - WOMAC_M4	1.967	2.834	.517	.908	3.025	3.801	29	.001

Selisih nilai Ekspresi Gen mRNA, Skala NPRS, dan Skor WOMAC

	Intv					
	Intervensi			Kontrol		
	Median	Minimum	Maximum	Median	Minimum	Maximum
diff_mRNA	4.75	.74	7.40	2.74	.32	7.88
diff_NPRS	-1.50	-3.00	.00	.00	-3.00	.00
diff_WOMAC	-4.00	-9.00	-1.00	-1.00	-12.00	.00

Ranks

	Intv	N	Mean Rank	Sum of Ranks
diff_mRNA	Kontrol	30	24.07	722.00
	Intervensi	30	36.93	1108.00
	Total	60		
diff_NPRS	Kontrol	30	40.00	1200.00
	Intervensi	30	21.00	630.00
	Total	60		
diff_WOMAC	Kontrol	30	40.48	1214.50
	Intervensi	30	20.52	615.50
	Total	60		

Test Statistics^a

	diff_mRNA	diff_NPRS	diff_WOMAC
Mann-Whitney U	257.000	165.000	150.500
Wilcoxon W	722.000	630.000	615.500
Z	-2.853	-4.432	-4.484
Asymp. Sig. (2-tailed)	.004	.000	.000

a. Grouping Variable: Intv

Penilaian Aspek Kemampuan Fungsional Subjek pada minggu ke-1 dan ke-4

Kelompok Intervensi**Paired Samples Statistics**

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Nyeri_WOMAC_M1	10.33	30	3.044	.556
	Nyeri_WOMAC_M4	8.47	30	3.401	.621
Pair 2	Fungsi_WOMAC_M1	35.00	30	8.910	1.627
	Fungsi_WOMAC_M4	32.77	30	9.446	1.725

Paired Samples Correlations

	N	Correlation	Sig.
Pair 1 Nyeri_WOMAC_M1 & Nyeri_WOMAC_M4	30	.914	.000
Pair 2 Fungsi_WOMAC_M1 & Fungsi_WOMAC_M4	30	.990	.000

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Nyeri_WOMAC_M1 - Nyeri_WOMAC_M4	1.867	1.383	.252	1.350	2.383	7.393	29	.000
Pair 2 Fungsi_WOMAC_M1 - Fungsi_WOMAC_M4	2.233	1.382	.252	1.717	2.749	8.853	29	.000

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum	Percentiles		
						25th	50th (Median)	75th
Kaku_WOMAC_M1	30	2.87	1.137	1	5	2.00	3.00	3.25
Kaku_WOMAC_M4	30	2.63	1.217	0	5	2.00	2.00	3.00

Ranks

	N	Mean Rank	Sum of Ranks
Kaku_WOMAC_M4 - Negative Ranks	7 ^a	4.00	28.00
Kaku_WOMAC_M1 - Positive Ranks	0 ^b	.00	.00
Ties	23 ^c		
Total	30		

a. Kaku_WOMAC_M4 < Kaku_WOMAC_M1

b. Kaku_WOMAC_M4 > Kaku_WOMAC_M1

c. Kaku_WOMAC_M4 = Kaku_WOMAC_M1

Test Statistics^a

	Kaku_WOMA C_M4 - Kaku_WOMA C_M1
Z	-2.646 ^b
Asymp. Sig. (2-tailed)	.008

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

Kelompok Kontrol

Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Nyeri_WOMAC_M1	9.63	30	4.375	.799
Nyeri_WOMAC_M4	9.17	30	4.800	.876
Pair 2 Fungsi_WOMAC_M1	23.20	30	12.885	2.352
Fungsi_WOMAC_M4	21.90	30	13.629	2.488

Paired Samples Correlations

	N	Correlation	Sig.
Pair 1 Nyeri_WOMAC_M1 & Nyeri_WOMAC_M4	30	.969	.000
Pair 2 Fungsi_WOMAC_M1 & Fungsi_WOMAC_M4	30	.995	.000

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Nyeri_WOMAC_M1 - Nyeri_WOMAC_M4	.467	1.224	.224	.010	.924	2.088	29	.046
Pair 2 Fungsi_WOMAC_M1 - Fungsi_WOMAC_M4	1.300	1.535	.280	.727	1.873	4.640	29	.000

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum	Percentiles		
						25th	50th (Median)	75th
Kaku_WOMAC_M1	30	4.13	2.360	0	7	2.00	5.00	6.00
Kaku_WOMAC_M4	30	3.93	2.532	0	7	2.00	5.00	6.00

Ranks

	N	Mean Rank	Sum of Ranks
Kaku_WOMAC_M4 - Negative Ranks	4 ^a	2.50	10.00
Kaku_WOMAC_M1 - Positive Ranks	0 ^b	.00	.00
Ties	26 ^c		
Total	30		

a. Kaku_WOMAC_M4 < Kaku_WOMAC_M1

b. Kaku_WOMAC_M4 > Kaku_WOMAC_M1

c. Kaku_WOMAC_M4 = Kaku_WOMAC_M1

Test Statistics^a

	Kaku_WOMA C_M4 - Kaku_WOMA C_M1
Z	-1.857 ^b
Asymp. Sig. (2-tailed)	.063

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

Selisih Skor Aspek Penilaian Kemampuan Fungsional Subjek di minggu ke-4

	Intv					
	Intervensi			Kontrol		
	Median	Minimum	Maximum	Median	Minimum	Maximum
diff_Nyeri_WOMAC	-2.00	-5.00	.00	.00	-6.00	.00
diff_kaku_WOMAC	.00	-1.00	.00	.00	-2.00	.00
diff_fungsi_WOMAC	-2.00	-5.00	.00	-1.00	-6.00	.00

Ranks

	Intv	N	Mean Rank	Sum of Ranks
diff_Nyeri_WOMAC	Kontrol	30	40.30	1209.00
	Intervensi	30	20.70	621.00
	Total	60		
diff_kaku_WOMAC	Kontrol	30	31.77	953.00
	Intervensi	30	29.23	877.00
	Total	60		
diff_fungsi_WOMAC	Kontrol	30	37.03	1111.00
	Intervensi	30	23.97	719.00
	Total	60		

Test Statistics^a

	diff_Nyeri_WO MAC	diff_kaku_WO MAC	diff_fungsi_W OMAC
Mann-Whitney U	156.000	412.000	254.000
Wilcoxon W	621.000	877.000	719.000
Z	-4.622	-.836	-2.982
Asymp. Sig. (2-tailed)	.000	.403	.003

a. Grouping Variable: Intv

Korelasi Selisih Ekspresi Gen mRNA, Skala NPRS dan Skor WOMAC

Correlations

			diff_mRNA	diff_NPRS	diff_WOMAC
Spearman's rho	diff_mRNA	Correlation Coefficient	1.000	-.183	-.121
		Sig. (2-tailed)	.	.161	.358
		N	60	60	60
	diff_NPRS	Correlation Coefficient	-.183	1.000	.563**
		Sig. (2-tailed)	.161	.	.000
		N	60	60	60
	diff_WOMAC	Correlation Coefficient	-.121	.563**	1.000
		Sig. (2-tailed)	.358	.000	.
		N	60	60	60

** Correlation is significant at the 0.01 level (2-tailed).

Korelasi Selisih Ekspresi Gen mRNA, Selisih Skala NPRS dan Selisih Skor WOMAC pada Kelompok Intervensi

Correlations

			diff_mRNA	diff_NPRS	diff_WOMAC
Spearman's rho	diff_mRNA	Correlation Coefficient	1.000	.296	.310
		Sig. (2-tailed)	.	.112	.096
		N	30	30	30
	diff_NPRS	Correlation Coefficient	.296	1.000	.373*
		Sig. (2-tailed)	.112	.	.042
		N	30	30	30
	diff_WOMAC	Correlation Coefficient	.310	.373*	1.000
		Sig. (2-tailed)	.096	.042	.
		N	30	30	30

*. Correlation is significant at the 0.05 level (2-tailed).

Korelasi Ekspresi Gen mRNA PRG4 dengan skala NPRS dan Skor WOMAC pada Minggu ke-4

Correlations

			mRNA_M4	NPRS_M4	WOMAC_M4
Spearman's rho	mRNA_M4	Correlation Coefficient	1.000	-.196	.058
		Sig. (2-tailed)	.	.134	.659
		N	60	60	60
	NPRS_M4	Correlation Coefficient	-.196	1.000	.319*
		Sig. (2-tailed)	.134	.	.013
		N	60	60	60
	WOMAC_M4	Correlation Coefficient	.058	.319*	1.000
		Sig. (2-tailed)	.659	.013	.
		N	60	60	60

*. Correlation is significant at the 0.05 level (2-tailed).

Korelasi Ekspresi Gen mRNA PRG4 dengan skala NPRS dan Skor WOMAC pada Kelompok Intervensi

Correlations

			mRNA_M4	NPRS_M4	WOMAC_M4
Spearman's rho	mRNA_M4	Correlation Coefficient	1.000	-.075	.031
		Sig. (2-tailed)	.	.695	.870
		N	30	30	30
	NPRS_M4	Correlation Coefficient	-.075	1.000	.553**
		Sig. (2-tailed)	.695	.	.002
		N	30	30	30
	WOMAC_M4	Correlation Coefficient	.031	.553**	1.000
		Sig. (2-tailed)	.870	.002	.
		N	30	30	30

** Correlation is significant at the 0.01 level (2-tailed).

Faktor yang Memengaruhi Perubahan Kemampuan Fungsional pada Kelompok Intervensi

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.530 ^a	.281	.256	2.06840

a. Predictors: (Constant), Sex

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	46.875	1	46.875	10.957	.003 ^b
	Residual	119.792	28	4.278		
	Total	166.667	29			

a. Dependent Variable: diff_WOMAC

b. Predictors: (Constant), Sex

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	-3.708	.422		-8.783	.000	-4.573	-2.843		
	Sex	-3.125	.944	-.530	-3.310	.003	-5.059	-1.191	1.000	1.000

a. Dependent Variable: diff_WOMAC

Excluded Variables^a

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	BB	-.319 ^b	-1.550	.133	-.286	.576	1.735	.576
	IMT	-.275 ^b	-1.771	.088	-.323	.988	1.012	.988

a. Dependent Variable: diff_WOMAC

b. Predictors in the Model: (Constant), Sex

HASIL RTPCR KELOMPOK INTERVENSI

KELOMPOK	Sample	Prg4			Prg4 Average Ct	GAPDH			GAPDH Average Ct	ΔCt	ΔΔCt	2 ^{-Δ(ΔCt)}
		Ct1	Ct2	Ct3		Ct1	Ct2	Ct3				
SAMPSEL SEBELUM PERLAKUAN	LA01	28,97	29,09	29,10	29,05	26,82	26,83	26,68	26,78	2,28	0,24	0,847
	LA02	28,68	28,51	28,61	28,60	27,27	27,32	27,25	27,28	1,32	-0,72	1,644
	LA03	29,88	30,05	29,83	29,92	27,53	27,26	27,36	27,38	2,54	0,50	0,707
	LA04	28,98	28,82	28,89	28,90	27,56	27,47	27,54	27,52	1,37	-0,66	1,584
	LA05	29,84	29,94	29,87	29,88	27,72	27,91	27,93	27,85	2,03	-0,01	1,005
	LA06	30,19	30,08	29,94	30,07	27,84	27,97	27,72	27,84	2,23	0,19	0,877
	LA07	29,83	29,65	29,82	29,77	26,83	26,74	26,87	26,81	2,95	0,92	0,530
	LA08	28,81	29,01	28,99	28,94	27,39	27,32	27,36	27,36	1,58	-0,46	1,373
SAMPSEL SETELAH PERLAKUAN	LB01	24,28	24,16	24,27	24,24	23,63	23,73	23,50	23,62	0,62	-1,42	2,677
	LB02	25,81	25,70	25,78	25,76	26,55	26,73	26,66	26,65	-0,88	-2,92	7,571
	LB03	25,36	25,28	25,31	25,32	25,93	25,85	25,78	25,85	-0,54	-2,57	5,954
	LB04	25,67	25,54	25,45	25,55	25,86	25,61	25,75	25,74	-0,19	-2,22	4,671
	LB05	25,03	25,20	25,04	25,09	25,25	25,33	25,15	25,24	-0,15	-2,19	4,564
	LB06	25,42	25,37	25,34	25,38	26,21	26,13	25,99	26,11	-0,73	-2,77	6,823
	LB07	25,75	25,67	25,77	25,73	26,01	25,93	25,86	25,93	-0,20	-2,24	4,725
	LB08	24,55	24,59	24,62	24,59	25,54	25,73	25,63	25,63	-1,05	-3,08	8,478

Calibrator (average
ΔCt control group) 2,04

HASIL RTPCR KELOMPOK INTERVENSI

KELOMPOK	Sample	Prg4			Prg4 Average Ct	GAPDH			GAPDH Average Ct	ΔCt	ΔΔCt	2 ^{-Δ(ΔCt)}
		Ct1	Ct2	Ct3		Ct1	Ct2	Ct3				
SAMPSEL SEBELUM PERLAKUAN	LA09	30,07	29,92	30,02	30,00	27,06	27,16	27,27	27,16	2,84	0,72	0,607
	LA10	29,31	29,19	29,25	29,25	28,18	28,22	28,14	28,18	1,07	-1,05	2,070
	LA11	29,38	29,24	29,34	29,32	27,30	27,13	27,23	27,22	2,10	-0,02	1,014
	LA12	28,83	28,78	28,64	28,75	26,55	26,62	26,65	26,61	2,14	0,02	0,984
	LA13	29,22	29,14	29,20	29,19	26,88	26,99	26,96	26,94	2,24	0,12	0,918
	LA14	28,52	28,33	28,35	28,40	26,67	26,75	26,64	26,69	1,71	-0,41	1,325
	LA15	29,67	29,94	29,79	29,80	27,03	27,10	27,12	27,08	2,72	0,60	0,661
	LA16	28,31	28,20	28,29	28,27	26,22	26,03	26,16	26,14	2,13	0,01	0,993
SAMPSEL SETELAH PERLAKUAN	LB09	24,55	24,63	24,57	24,58	25,16	24,95	25,18	25,10	-0,51	-2,63	6,203
	LB10	26,61	26,64	26,65	26,63	26,04	26,06	25,92	26,01	0,63	-1,49	2,815
	LB11	25,67	25,57	25,53	25,59	24,82	24,94	24,99	24,92	0,67	-1,45	2,725
	LB12	24,91	25,10	25,11	25,04	25,38	25,15	25,23	25,25	-0,21	-2,33	5,038
	LB13	25,71	25,79	25,80	25,77	25,83	26,02	26,03	25,96	-0,19	-2,31	4,969
	LB14	24,61	24,80	24,81	24,74	25,42	25,21	25,44	25,36	-0,62	-2,74	6,663
	LB15	26,18	26,05	25,98	26,07	26,47	26,72	26,45	26,55	-0,48	-2,60	6,047
	LB16	24,42	24,54	24,59	24,52	25,62	25,36	25,42	25,47	-0,95	-3,07	8,395

Calibrator (average
ΔCt control group) 2,12

HASIL RTPCR KELOMPOK INTERVENSI

KELOMPOK	Sample	Prg4			Prg4 Average Ct	GAPDH			GAPDH Average Ct	ΔCt	ΔΔCt	2 ^{-Δ(ΔCt)}
		Ct1	Ct2	Ct3		Ct1	Ct2	Ct3				
SAMPSEL SEBELUM PERLAKUAN	LA17	28,11	28,30	28,28	28,23	26,35	26,24	26,37	26,32	1,91	-0,23	1,174
	LA18	28,94	28,98	29,19	29,04	27,19	27,04	27,28	27,17	1,87	-0,27	1,209
	LA19	29,91	30,06	29,78	29,92	26,69	26,77	26,96	26,81	3,11	0,97	0,511
	LA20	29,48	29,29	29,40	29,39	27,58	27,59	27,63	27,60	1,79	-0,35	1,275
	LA21	28,10	28,24	28,11	28,15	26,52	26,55	26,76	26,61	1,54	-0,60	1,517
	LA22	28,48	28,42	28,53	28,48	26,44	26,19	26,36	26,33	2,15	0,01	0,996
	LA23	29,92	29,33	29,87	29,91	26,79	26,74	26,85	26,79	3,11	0,97	0,510
	LA24	28,14	28,22	28,39	28,25	26,66	26,68	26,46	26,60	1,65	-0,49	1,405
SAMPSEL SETELAH PERLAKUAN	LB17	25,79	25,66	25,80	25,75	25,68	25,64	25,77	25,70	0,05	-2,09	4,250
	LB18	25,52	25,37	25,35	25,41	26,13	25,97	26,01	26,04	-0,62	-2,76	6,794
	LB19	25,54	25,55	25,60	25,56	25,83	25,90	26,01	25,91	-0,35	-2,49	5,621
	LB20	26,15	25,96	26,09	26,07	26,10	25,95	25,92	25,99	0,08	-2,06	4,182
	LB21	24,66	24,89	24,87	24,81	25,62	25,85	25,83	25,77	-0,96	-3,10	8,579
	LB22	25,29	25,18	25,30	25,26	25,94	26,00	25,92	25,95	-0,70	-2,84	7,148
	LB23	24,95	25,03	24,97	24,98	25,24	25,36	25,34	25,31	-0,33	-2,47	5,544
	LB24	24,31	24,50	24,51	24,44	24,69	24,46	24,54	24,56	-0,12	-2,26	4,804

Calibrator (average
ΔCt control group) 2,14

HASIL RTPCR KELOMPOK INTERVENSI

KELOMPOK	Sample	Prg4			Prg4 Average Ct	GAPDH			GAPDH Average Ct	ΔCt	ΔΔCt	2 ^{-ΔΔCt}
		Ct1	Ct2	Ct3		Ct1	Ct2	Ct3				
SAMPSEL SEBELUM PERLAKUAN	LA25	28.59	28.65	28.71	28.65	27.56	27.64	27.48	27.56	1.09	-0.97	1.955
	LA26	29.62	29.66	29.49	29.59	27.60	27.46	27.36	27.47	2.12	0.06	0.960
	LA27	29.34	29.25	29.16	29.25	26.24	26.13	26.23	26.20	3.05	0.99	0.503
	LA28	29.14	29.25	29.27	29.22	27.04	27.09	27.11	27.08	2.14	0.08	0.944
	LA29	28.49	28.70	28.69	28.63	27.34	27.25	27.29	27.29	1.33	-0.72	1.652
	LA30	28.77	28.66	28.63	28.69	25.98	26.20	26.04	26.07	2.61	0.56	0.680
SAMPSEL SETELAH PERLAKUAN	LB25	24.76	24.88	24.93	24.86	25.21	25.29	25.23	25.24	-0.39	-2.44	5.441
	LB26	24.58	24.70	24.68	24.65	25.57	25.62	25.56	25.58	-0.93	-2.99	7.929
	LB27	25.48	25.60	25.65	25.58	26.01	26.03	26.08	26.04	-0.46	-2.52	5.738
	LB28	25.42	25.61	25.41	25.48	25.22	25.18	25.14	25.18	0.30	-1.76	3.380
	LB29	26.05	25.84	25.86	25.92	26.51	26.45	26.46	26.47	-0.56	-2.61	6.122
	LB30	25.55	25.63	25.57	25.58	25.48	25.42	25.37	25.42	0.16	-1.90	3.725

Calibrator (average
ΔCt control group) 2,06

HASIL RTPCR KELOMPOK NON INTERVENSI

KELOMPOK	Sample	Prg4			Prg4 Average Ct	GAPDH			GAPDH Average Ct	ΔCt	ΔΔCt	2 ^{-ΔΔCt}
		Ct1	Ct2	Ct3		Ct1	Ct2	Ct3				
SAMPSEL SEBELUM PERLAKUAN	LA31	29.48	29.43	29.29	29.40	27.38	27.48	27.39	27.42	1.98	-0.11	1.078
	LA32	28.88	28.81	28.95	28.88	27.21	27.17	27.06	27.15	1.73	-0.36	1.282
	LA33	29.73	29.76	29.87	29.79	27.97	28.06	28.18	28.07	1.72	-0.38	1.297
	LA34	29.72	29.79	29.94	29.82	27.85	27.92	27.91	27.89	1.92	-0.17	1.124
	LA35	30.06	29.98	30.17	30.07	27.90	27.78	27.74	27.81	2.26	0.17	0.888
	LA36	30.22	30.29	30.23	30.25	27.70	27.46	27.57	27.58	2.67	0.58	0.670
	LA37	29.12	28.95	29.05	29.04	27.72	27.63	27.66	27.67	1.37	-0.72	1.650
	LA38	30.19	30.12	30.02	30.11	27.13	27.04	26.93	27.03	3.08	0.98	0.505
	SAMPSEL SETELAH PERLAKUAN	LB31	26.26	26.30	26.13	26.23	26.21	26.22	26.02	26.15	0.08	-2.01
LB32		25.85	24.45	24.52	24.94	25.78	25.94	25.92	25.88	-0.94	-3.03	8.180
LB33		27.34	27.28	27.42	27.35	27.19	27.25	27.11	27.18	0.16	-1.93	3.807
LB34		26.09	26.30	26.25	26.21	26.74	26.85	26.71	26.77	-0.55	-2.65	6.257
LB35		25.47	25.49	25.44	25.47	24.81	24.92	24.88	24.87	0.60	-1.50	2.819
LB36		24.87	25.08	25.03	24.99	25.78	25.61	25.73	25.71	-0.71	-2.81	6.991
LB37		26.87	27.03	27.14	27.01	27.11	27.12	26.92	27.05	-0.04	-2.13	4.373
LB38		25.76	25.67	25.71	25.71	25.42	25.53	25.43	25.46	0.25	-1.84	3.577

Calibrator (average
ΔCt control group) 2,09

HASIL RTPCR KELOMPOK NON INTERVENSI

KELOMPOK	Sample	Prg4			Prg4 Average Ct	GAPDH			GAPDH Average Ct	ΔCt	ΔΔCt	2 ^{-ΔΔCt}
		Ct1	Ct2	Ct3		Ct1	Ct2	Ct3				
SAMPSEL SEBELUM PERLAKUAN	LA39	28.98	28.95	28.88	28.94	28.07	27.95	27.85	27.96	0.98	-1.04	2.059
	LA40	29.81	29.72	29.64	29.72	27.76	27.68	27.87	27.77	1.95	-0.07	1.049
	LA41	28.76	28.80	28.78	28.78	26.90	26.91	26.74	26.85	1.93	-0.09	1.066
	LA42	28.70	28.63	28.54	28.62	26.40	26.36	26.35	26.37	2.25	0.23	0.852
	LA43	30.11	30.22	30.17	30.17	27.89	27.88	28.14	27.97	2.20	0.17	0.886
	LA41	29.70	29.69	29.77	29.72	27.94	27.88	27.84	27.89	1.83	-0.19	1.140
	LA45	29.52	29.50	29.49	29.50	27.08	27.12	27.07	27.09	2.41	0.39	0.762
	LA46	29.07	29.09	29.00	29.05	26.44	26.46	26.41	26.44	2.62	0.59	0.662
	SAMPSEL SETELAH PERLAKUAN	LB39	26.55	26.35	26.48	26.46	26.32	26.36	26.18	26.29	0.17	-1.85
LB40		27.06	26.99	27.22	27.09	26.65	26.74	26.51	26.63	0.46	-1.57	2.960
LB41		26.09	26.15	26.31	26.18	25.70	25.86	25.80	25.79	0.40	-1.63	3.085
LB42		25.65	25.87	25.77	25.76	25.73	25.65	25.79	25.72	0.04	-1.98	3.951
LB43		25.75	25.85	25.68	25.76	26.62	26.70	26.56	26.63	-0.87	-2.89	7.406
LB41		26.61	26.42	26.63	26.55	26.00	26.06	25.97	26.01	0.54	-1.48	2.787
LB45		25.76	26.03	25.95	25.91	27.05	27.01	26.95	27.00	-1.09	-3.11	8.646
LB46		26.24	26.39	26.26	26.30	26.45	26.26	26.36	26.36	-0.06	-2.08	4.234

Calibrator (average
ΔCt control group) 2,02

HASIL RTPCR KELOMPOK NON INTERVENSI

KELOMPOK	Sample	Prg4			Prg4 Average Ct	GAPDH			GAPDH Average Ct	ΔCt	ΔΔCt	2 ^{-ΔΔCt}
		Ct1	Ct2	Ct3		Ct1	Ct2	Ct3				
SAMPel SEBELUM PERLAKUAN	LA47	28,89	28,79	28,67	28,78	26,89	26,77	26,78	26,81	1,97	-0,13	1,095
	LA48	28,98	29,07	29,13	29,06	27,94	27,95	28,05	27,98	1,08	-1,02	2,029
	LA49	29,38	29,40	29,52	29,43	26,36	26,56	26,38	26,43	3,00	0,90	0,536
	LA50	28,98	29,16	29,02	29,05	26,56	26,61	26,75	26,64	2,41	0,31	0,805
	LA51	29,02	29,01	29,18	29,07	27,93	27,91	28,10	27,98	1,09	-1,01	2,014
	LA52	29,54	29,45	29,61	29,53	27,84	28,02	28,04	27,97	1,57	-0,53	1,448
	LA53	29,68	29,74	29,54	29,65	26,93	27,00	26,96	26,96	2,69	0,59	0,665
	LA54	30,13	30,05	29,95	30,04	27,02	27,05	27,08	27,05	2,99	0,89	0,539
SAMPel SETELAH PERLAKUAN	LB47	25,81	25,67	25,74	25,74	26,22	26,25	26,11	26,19	-0,45	-2,55	5,872
	LB48	26,71	26,83	26,91	26,82	26,44	26,58	26,49	26,50	0,31	-1,79	3,451
	LB49	26,71	26,72	26,69	26,71	27,03	26,89	26,96	26,96	-0,25	-2,35	5,112
	LB50	25,93	25,79	25,86	25,86	25,38	25,48	25,53	25,46	0,40	-1,70	3,257
	LB51	26,17	26,33	26,22	26,24	26,70	26,87	26,85	26,81	-0,57	-2,67	6,351
	LB52	26,86	26,67	26,68	26,74	26,31	26,15	26,39	26,28	0,45	-1,65	3,132
	LB53	26,37	26,34	26,31	26,34	26,32	26,24	26,30	26,29	0,05	-2,05	4,133
	LB54	24,45	24,47	24,57	24,50	22,87	22,97	22,80	22,88	1,62	-0,48	1,398

Calibrator (average
ΔCt control group) 2,10

HASIL RTPCR KELOMPOK NON INTERVENSI

KELOMPOK	Sample	Prg4			Prg4 Average Ct	GAPDH			GAPDH Average Ct	ΔCt	ΔΔCt	2 ^{-ΔΔCt}
		Ct1	Ct2	Ct3		Ct1	Ct2	Ct3				
SAMPel SEBELUM PERLAKUAN	LA55	30,13	30,33	30,19	30,22	27,60	27,52	27,44	27,52	2,70	0,70	0,614
	LA56	30,00	29,79	29,74	29,84	28,07	28,06	28,00	28,04	1,80	-0,19	1,143
	LA57	30,01	30,11	30,23	30,12	27,98	27,94	27,87	27,93	2,19	0,19	0,874
	LA58	29,82	29,65	29,60	29,69	28,59	28,41	28,58	28,53	1,16	-0,83	1,776
	LA59	28,52	28,50	28,46	28,49	27,13	27,40	27,21	27,25	1,25	-0,75	1,677
	LA60	30,34	30,18	30,31	30,28	27,43	27,40	27,42	27,42	2,86	0,87	0,548
SAMPel SETELAH PERLAKUAN	LB55	24,53	24,39	24,46	24,46	23,68	23,77	23,53	23,66	0,80	-1,19	2,285
	LB56	25,47	25,52	25,50	25,50	25,69	25,86	25,89	25,81	-0,32	-2,31	4,955
	LB57	26,65	26,80	26,59	26,68	26,37	26,46	26,49	26,44	0,24	-1,75	3,369
	LB58	25,52	25,74	25,70	25,65	25,59	25,52	25,56	25,56	0,10	-1,90	3,721
	LB59	26,42	26,50	26,43	26,45	26,54	26,53	26,75	26,61	-0,16	-2,15	4,435
	LB60	24,78	24,72	24,86	24,79	22,61	22,60	22,54	22,58	2,20	0,21	0,864

Calibrator (average
ΔCt control group) 1,99

CURICULUM VITAE



A. Data Pribadi

1. Nama : Dr. Mohammad Adib Khumaidi, SpOT
2. Tempat, tgl. lahir : Lamongan, 28 Juni 1974
3. Alamat : Jalan Boulevard Perumahan Banjar Wijaya Cluster Krisan Blok B67/10 RT/RW 001/012 Cipete, Kecamatan Pinang, Kota Tangerang, Banten.
4. Status Sipil : WNI
 - a. Nama istri : Dr. Maureen Julisty Nasution
 - b. Nama anak : Mohammad Harits Naufal Al-Ghifari, Farahdiba Irania Zahra Atthirah, dan Khansa Tsalits Naurah Rahmania

B. Riwayat Pendidikan

- Tamat SD tahun 1986 di SDN Alun – Alun 1 Lamongan
- Tamat SLTP tahun 1989 di SMPN 1 Lamongan
- Tamat SLTA tahun 1992 di SMAN 2 Lamongan
- Sarjana (S1) Fakultas Kedokteran tahun 1999 di Universitas Airlangga
- Spesialisasi Orthopaedi dan Traumatologi tahun 2011 di Universitas Indonesia

C. Pekerjaan dan Riwayat Pekerjaan

- Ketua Umum Pengurus Besar Ikatan Dokter Indonesia (PB IDI) pada tahun 2022-2025
- Ketua Tim Mitigasi Dokter IDI pada tahun 2020-sekarang
- Ketua Lembaga Kesehatan Majelis Ulama Indonesia (MUI) pada tahun 2020-2025
- Dokter Spesialis Ortopedi di RSUD Cengkareng – Tangerang pada tahun 2011 – sekarang

- Dokter Spesialis Ortopedi di RSUD Sari Asih Tangerang pada tahun 2011 – sekarang
- Dosen Tetap Fakultas Kedokteran dan Kesehatan (FKK) Universitas Muhammadiyah Jakarta pada tahun 2006 – sekarang
- Instruktur MFR, BLS dan BTCLS AGD 118 pada tahun 2002 – sekarang
- Instruktur MFR – Program PEER USAID pada tahun 2002 – sekarang
- Anggota Komite Internship Dokter Indonesia (KIDI) Pusat pada tahun 2014 – 2017
- Wakil Dekan III FKK Universitas Muhammadiyah Jakarta pada tahun 2015 – 2016
- Kabid Kurikulum MEU FKK Universitas Muhammadiyah Jakarta pada tahun 2013 – 2015
- Konsultan HWS Project – World Bank pada tahun 2005 – 2007
- Dokter IGD RSUD Sari Asih Tangerang pada September 2001 – 2007
- Dokter Umum di Rumah Sakit Pertamina Pusat Jakarta pada November 2004 – Januari 2005
- Dosen tidak tetap mata kuliah “Kegawatdaruratan Medik” di Program D3 Jurusan Perumaha Sakitan dan Rehabilitasi Medik Fakultas Kedokteran Universitas Indonesia pada tahun 2003 – 2005
- Dokter PTT di Brigade Siaga Bencana (BSB) Depkes RI pada tahun 2001 – 2004
- Dokter Puskesmas Kepulauan Seribu pada tahun April – Juni 2002
- Dokter Umum di Klinik 24 jam Jakarta 1999 – 2001

D. Pengalaman Organisasi :

- Ketua Umum PB IDI 2022-2025
- Presiden MASEAN 2022 -2024
- Sekjen Perhimpunan Ahli Bedah Ortopedi Indonesia (PABOI) 2016 – 2019, 2019 - 2022
- Ketua Perhimpunan Dokter Emergensi Indonesia 2015 -2018, 2019-2022
- Anggota Senat Fakultas FKK UMJ 2013 – sekarang
- Ketua Terpilih PB IDI / Wakil ketua Umum I PB IDI 2018-2022
- Ketua Lembaga Kesehatan MN KAHMI 2017-2022
- Sekjen PB IDI 2015 - 2018
- Ketua Bidang Organisasi PB IDI 2012-2015
- Anggota Komite Internship Dokter Indonesia (KIDI) Pusat 2014 -2017
- Anggota Bidang Kesejahteraan dan Kesehatan ICMI Pusat 2012-2014
- Pengurus Pusat PABOI 2010 - 2012

E. Pengalaman Voluntari :

- Ketua pelaksana Harian Tim Penanggulangan gempa Aceh PB IDI (2004) Chief Medical Official untuk Bencana Gempa BAM Iran (2003)
- Ketua Tim Siaga dan Penanggulangan Banjir DKI Jakarta Kemenkes RI (2007) Executive Officer Brigadir Siaga Bencana Kemenkes RI (2001-2004)
- Dokter spesialis ortopedi untuk Gempa Palu Donggala (2018) Dokter spesialis ortopedi untuk tsunami Banten (2019)

F. Pelatihan yang pernah diikuti:

- Certificate of Completion 1st National Medical First Responder Training Course USAID ADPC Certificate of Completion Training for Instructor (TFI) Course ADPC – USAID di AIT Center Thailand
- Certificate of Completion Medical First Responder Instructor Workshop (MFRIW) ADPC – USAID di Pattaya – Thailand
- Certificate of Training Hospital Preparedness for Emergency and Disaster (HOPE) IKABI – PERSI, Jakarta
- Silent Mentor Program (Cadaveric Dissection Course) Medical Simulation center - Tzu-Chi University Taiwan
- World Medical Association (WMA) – Insead Leadership and Medical Advocacy Training - Singapura
- Confederation of Medical Associations in Asia and Oceania (CMAAO) - Bangkok 2016
- Gyeonggi Medical Orthopaedi Training Program - Gyeonggi – South Korea 2015
- Young Ambassador APOA (Asia Pasific Orthopaedic Association) - Antalya Turki 2018