



ISAKOS  
CONGRESS  
2025



MUNICH  
GERMANY  
June 8-11

# Efficacy of Autologous Micrografting Technology in Managing Osteoarthritis Pain

Camilo P. Helito, MD, PhD, Prof, São Paulo, SP, BRAZIL

Valeria Pessei, PhD Student, Perugia, ITALY

Cecilina Zaniboni, PhD Student, Candiolo, ITALY

*University of São Paulo, São Paulo, São Paulo, BRAZIL*



# Faculty Disclosure Information

- **CONMED Linvatec**
- **Johnson & Johnson**
- **Link Orthopaedics**
- **Procter & Gamble**
- **Regenera AMT**
- **Smith & Nephew**
- **VSY**



**ISAKOS**  
CONGRESS  
2025



**MUNICH**  
**GERMANY**  
June 8-11



# Introduction

- Osteoarthritis (OA) is a prevalent degenerative joint disease that significantly impacts the quality of life due to chronic pain and functional limitation
- Traditional treatments, including pharmacological interventions and surgery, often provide only temporary relief and carry the risk of adverse effect
- This study explores the efficacy of Rigenera® Technology, an innovative autologous micrografting procedure, in reducing pain and improving function in patients with knee OA.



**ISAKOS**  
CONGRESS  
2025



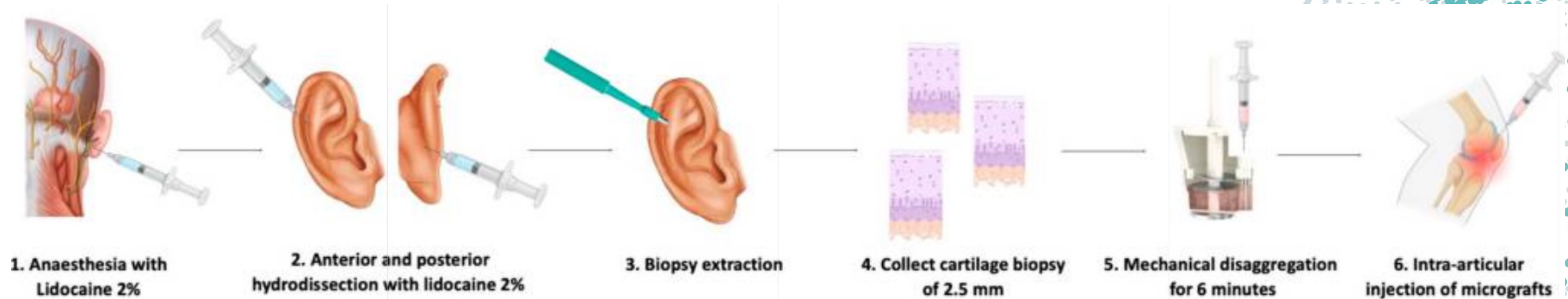
**MUNICH**  
**GERMANY**  
June 8-11



# Methods

- A prospective clinical study was conducted involving 10 patients with knee OA, who underwent the Rigenera® micrografting procedure
- Micrografts were obtained from the patients' auricular cartilage and injected into the affected knee
- Pain and function were assessed using the Visual Analog Scale (VAS), Knee Injury and Osteoarthritis Outcome Score (KOOS), and Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) at baseline and 1, 6, and 12 months post-procedure
- Adverse events were monitored throughout the study

# Figure 1: Autologous Micrografting Protocol



Mytocel MSK® The procedure begins with local anesthesia using 2% lidocaine (1), followed by the anterior and posterior hydro-dissection of the auricular cartilage (2). Cartilage biopsies (2.5 mm) are then extracted from the ear (3,4). The biopsies are mechanically disaggregated for 6 min (5) to obtain micrografts. Finally, the micrografts are injected intra-articularly into the target joint (6). Created with Biorender.com.



ISAKOS  
CONGRESS  
2025



MUNICH  
GERMANY  
June 8–11



# Results

- The mean VAS score significantly decreased from  $8.3 \pm 0.94$  at baseline to  $2.4 \pm 0.51$  at 1 month, with sustained improvements at 6 and 12 months
- KOOS scores showed an 80% improvement at 1 month, stabilizing at 83% by 12 months
- Similarly, WOMAC scores indicated a 55% reduction in pain and functional limitations by 12 months
- No adverse events were reported, and all patients experienced complete healing of the biopsy site within 7 days

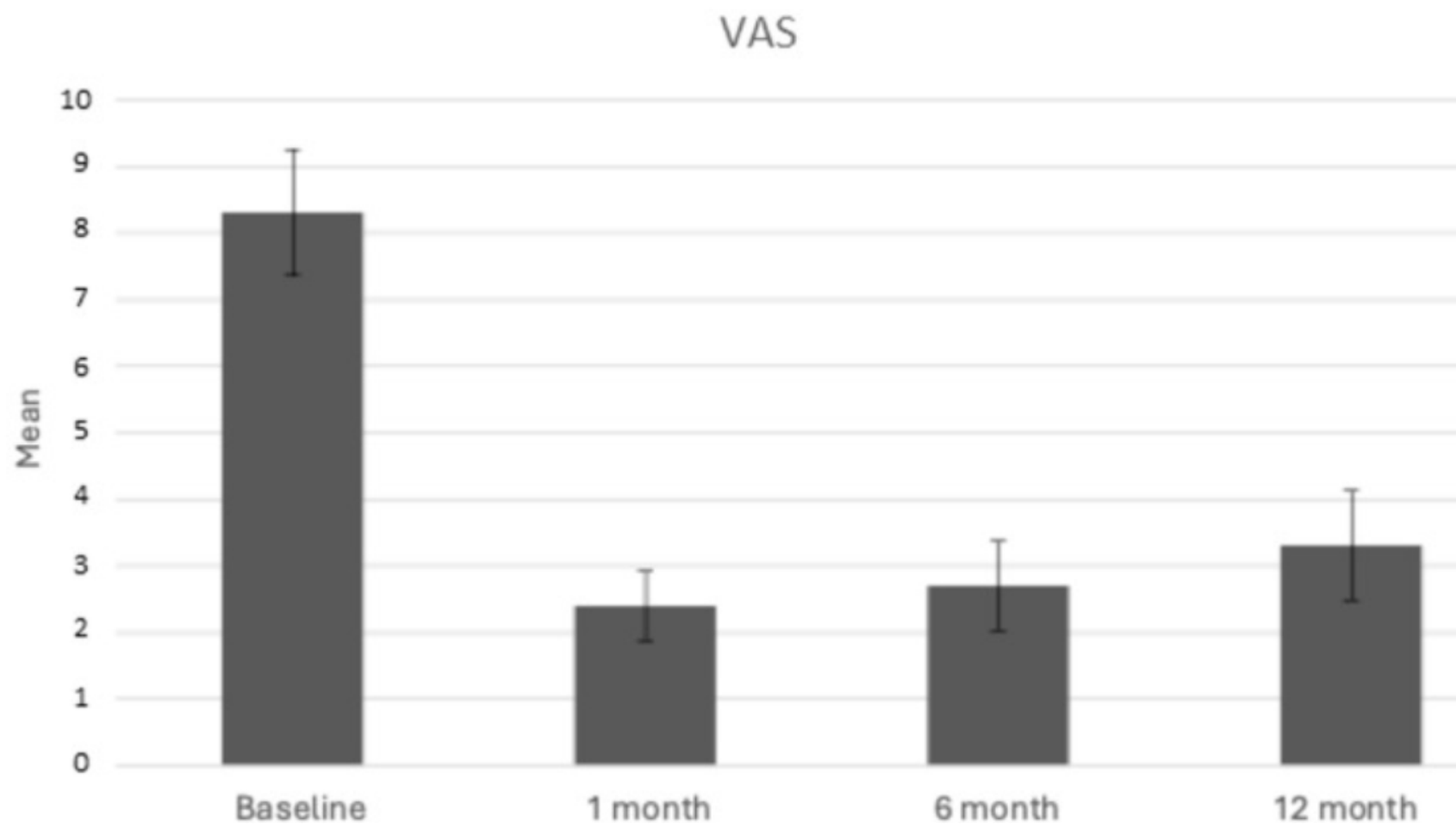


**ISAKOS**  
CONGRESS  
2025



**MUNICH**  
**GERMANY**  
June 8-11

## Figure 2: Mean VAS scores



Mean VAS scores recorded at baseline and 1 month, 6 months, and 12 months post-treatment, illustrating the changes in pain perception over time.

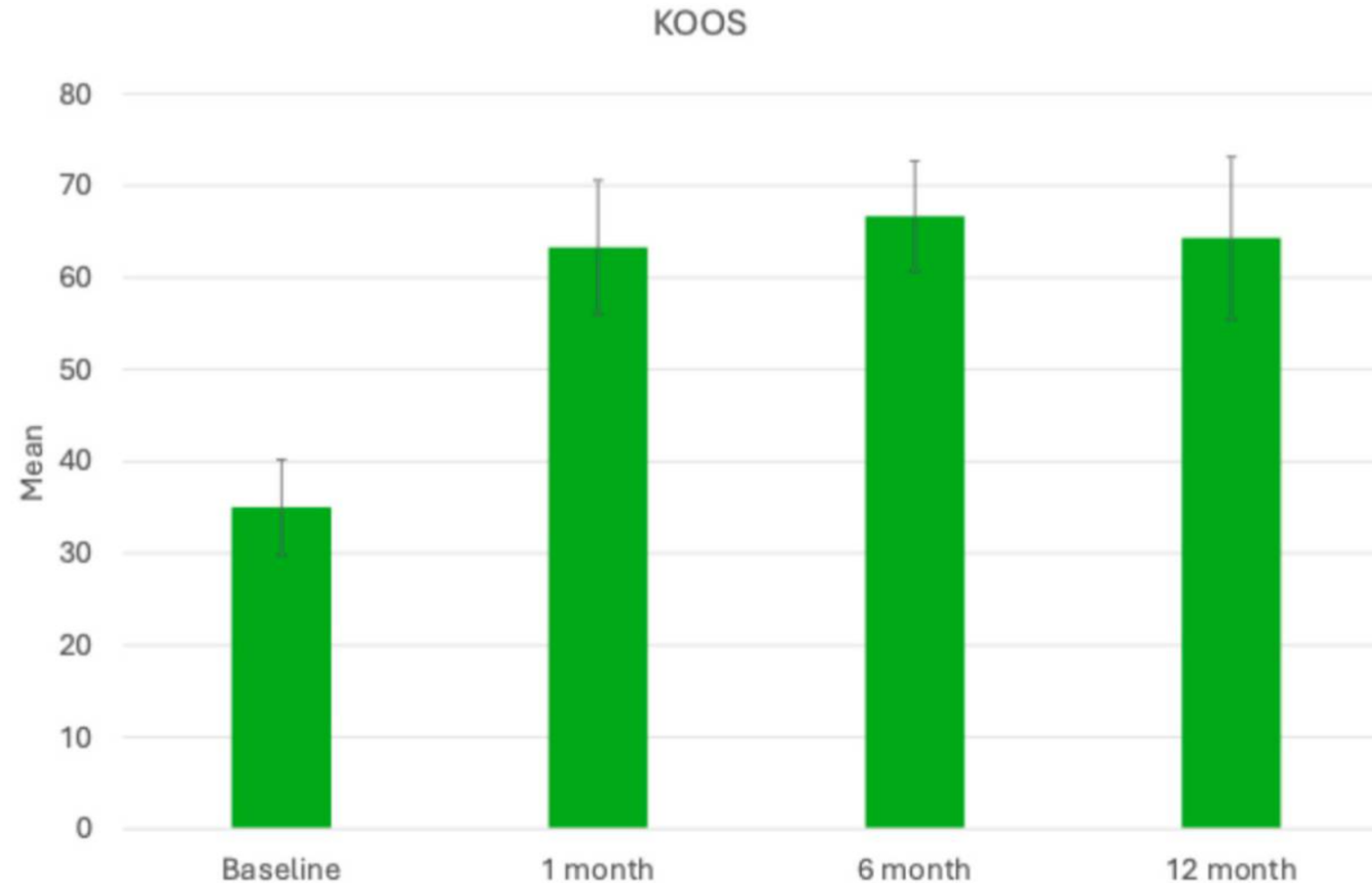


**ISAKOS**  
CONGRESS  
2025



**MUNICH**  
**GERMANY**  
June 8-11

## Figure 3: Mean KOOS scores



Mean KOOS scores recorded before the procedure, and at 1, 6, and 12 months post-procedure, highlighting changes in knee function and symptoms over the course of the follow-up period.

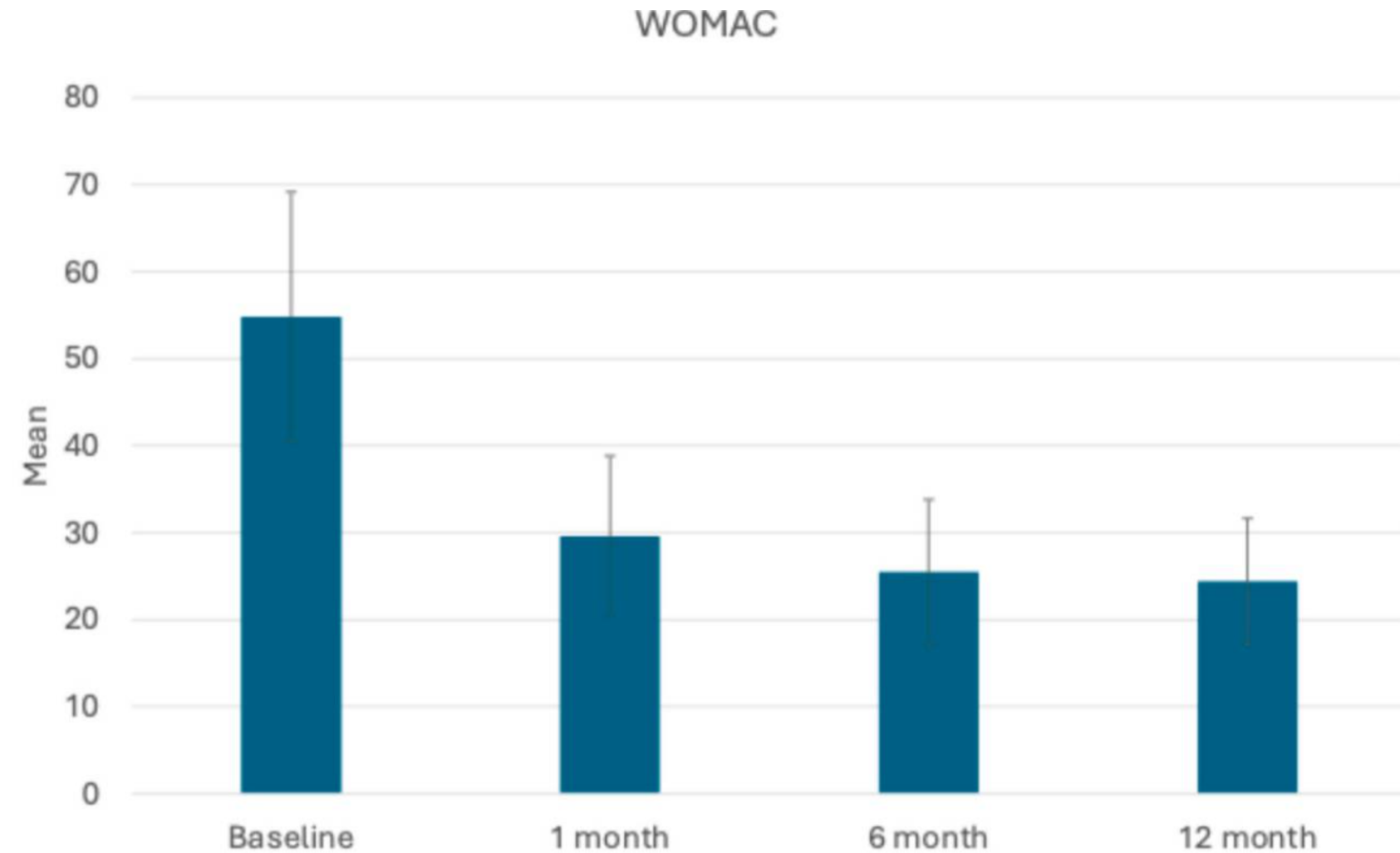


**ISAKOS**  
CONGRESS  
2025



**MUNICH**  
**GERMANY**  
June 8-11

## Figure 4: Mean WOMAC scores



Mean WOMAC scores recorded before the procedure and at 1, 6 and 12 months post-procedure, demonstrating the improvements in knee function and symptoms during the follow-up period.



**ISAKOS**  
CONGRESS  
2025



**MUNICH**  
**GERMANY**  
June 8-11



# Conclusion

- The study demonstrates that autologous micrografting using Rigenera® Technology is a safe and effective method for managing pain and improving function in knee OA patients
- These results suggest that this approach could reduce the need for invasive surgical interventions and enhance the quality of life for patients with AO
- Further research with larger cohorts and extended follow-up is warranted to confirm these findings.



**ISAKOS**  
CONGRESS  
2025



**MUNICH**  
**GERMANY**  
June 8-11

# References

- 1. Yao, Q.; Wu, X.; Tao, C.; Gong, W.; Chen, M.; Qu, M.; Zhong, Y.; He, T.; Chen, S.; Xiao, G. Osteoarthritis: Pathogenic signaling pathways and therapeutic targets. *Signal Transduct. Target. Ther.* 2023, 8, 56. [CrossRef] [PubMed]
- 2. Pereira, D.; Peleteiro, B.; Araújo, J.; Branco, J.; Santos, R.A.; Ramos, E. The effect of osteoarthritis definition on prevalence and incidence estimates: A systematic review. *Osteoarthr. Cartil.* 2011, 19, 1270–1285. [CrossRef] [PubMed]
- 3. Glyn-Jones, S.; Palmer, A.J.; Agricola, R.; Price, A.J.; Vincent, T.L.; Weinans, H.; Carr, A.J. Osteoarthritis. *Lancet* 2015, 386, 376–387. [CrossRef]
- 4. Zhang, Y.; Jordan, J.M. Epidemiology of osteoarthritis. *Clin. Geriatr. Med.* 2010, 26, 355–369. [CrossRef]
- 5. Vina, E.R.; Kwoh, C.K. Epidemiology of osteoarthritis: Literature update. *Curr. Opin. Rheumatol.* 2018, 30, 160–167. [CrossRef] [PubMed]
- 6. Neogi, T. The epidemiology and impact of pain in osteoarthritis. *Osteoarthr. Cartil.* 2013, 21, 1145–1153. [CrossRef]
- 7. Coaccioli, S.; Sarzi-Puttini, P.; Zis, P.; Rinonapoli, G.; Varrassi, G. Osteoarthritis: New Insight on Its Pathophysiology. *J. Clin. Med.* 2022, 11, 6013. [CrossRef]
- 8. Altman, R.D. Criteria for the classification of osteoarthritis of the knee and hip. *Scand. J. Rheumatol.* 1987, 16 (Suppl. 65), 31–39. [CrossRef]
- 9. Kuyinu, E.L.; Narayanan, G.; Nair, L.S.; Laurencin, C.T. Animal models of osteoarthritis: Classification, update, and measurement of outcomes. *J. Orthop. Surg. Res.* 2016, 11, 19. [CrossRef]
- 10. Kohn, M.D.; Sassoon, A.A.; Fernando, N.D. Classifications in Brief: Kellgren-Lawrence Classification of Osteoarthritis. *Clin. Orthop. Relat. Res.* © 2016, 474, 1886–1893. [CrossRef]
- 11. Veronese, N.; Cooper, C.; Bruyère, O.; Al-Daghri, N.M.; Branco, J.; Cavalier, E.; Cheleschi, S.; da Silva Rosa, M.C.; Conaghan, P.G.; Dennison, E.M.; et al. Multimodal Multidisciplinary Management of Patients with Moderate to Severe Pain in Knee Osteoarthritis: A Need to Meet Patient Expectations. *Drugs* 2022, 82, 1347–1355. [CrossRef] [PubMed]
- 12. Baumbach, L.; Roos, E.M.; Lykkegaard, J.; Thomsen, K.S.; Kristensen, P.L.; Christensen, A.I.; Thorlund, J.B. Patients with osteoarthritis are least likely to receive lifestyle advice compared with patients with diabetes and hypertension: A national health survey study from Denmark. *Osteoarthr. Cartil. Open* 2020, 2, 100067. [CrossRef] [PubMed]
- 13. Primorac, D.; Molnar, V.; Matišić, V.; Hudetz, D.; Jelečić, Ž.; Rod, E.; Cukelj, F.; Vidović, D.; Vrdoljak, T.; Dobričić, B.; et al. ~ Comprehensive Review of Knee Osteoarthritis Pharmacological Treatment and the Latest Professional Societies' Guidelines. *Pharmaceuticals* 2021, 14, 205. [CrossRef] [PubMed]
- 14. Bruyère, O.; Cooper, C.; Pelletier, J.P.; Maheu, E.; Rannou, F.; Branco, J.; Luisa Brandi, M.; Kanis, J.A.; Altman, R.D.; Hochberg, M.C.; et al. A consensus statement on the European Society for Clinical and Economic Aspects of Osteoporosis and Osteoarthritis (ESCEO) algorithm for the management of knee osteoarthritis-From evidence-based medicine to the real-life setting. *Semin. Arthritis Rheum.* 2016, 45, S3–S11. [CrossRef]
- 15. Lin, F.; Zhang, X.; Cui, C. Mesenchymal stem cells and platelet rich plasma therapy for knee osteoarthritis: An umbrella review of systematic reviews with meta-analysis. *Ann. Saudi Med.* 2024, 44, 195–211. [CrossRef]
- 16. Grässel, S.; Muschter, D. Recent advances in the treatment of osteoarthritis. *F1000Research* 2020, 9, 325. [CrossRef]
- 17. De Girolamo, L.; Kon, E.; Filardo, G.; Marmotti, A.G.; Soler, F.; Peretti, G.M.; Vannini, F.; Madry, H.; Chubinskaya, S. Regenerative approaches for the treatment of early OA. *Knee Surg. Sports Traumatol. Arthrosc.* 2016, 24, 1826–1835. [CrossRef]
- 18. Giaccone, M.; Brunetti, M.; Camandona, M.; Trovato, L.; Graziano, A. A New Medical Device, Based on Rigenera Protocol, in the Management of Complex Wounds. *J. Stem Cells Res. Rev. Rep.* 2014, 1, 3.

