

Part A. PERSONAL INFORMATION

First and Family Name	MARIA PRADO NOVOA		
DNI/NIE/passport			
Reserch codes	Scopus Author ID	59934724600	
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A.1. Current position

Name of University/Institution	Universidad de Málaga
Department	Ingeniería Mecánica, Térmicas y de Fluidos
Adress and Country	Málaga, Andalucía, España

Part B. CV SUMMARY

The first period of my research career was focused on mechanical engineering applied to Mobile Robotics, but for the last 15 years my research interests have been focused on the field of Biomechanics, both experimental and theoretical. To begin working in a research field that did not exist at the University of Malaga, I spent a one-year postdoctoral stay in the biomechanical engineering group of École Polytechnique in Montreal (Canada).

I have carried out research on the kinematics and kinetics of human joints, in healthy subjects and in the immediate postoperative period, as well as studies for the design of mechanical devices and surgical techniques of special applicability to orthopedic interventions. The projects in which I have been involved included both experimental and theoretical tasks, addressing both in a coordinated and complementary way. Regarding theoretical issues, I have worked on the development of finite element models of the human spine, wrist, and knee joint, and also on the design of the aforementioned orthopedic devices. Among the experimental studies, I have worked on in-vitro laboratory tests with animal and cadaveric models and in-vivo experiments with patients and healthy volunteers as control groups. Some of those studies included the assessment of mechanical devices developed during the projects.

The scientific quality of my research career is supported by the award of four six-year periods of research formally recognized, with an intermediate gap at the time of the change of research field; and by the number of publications in high-impact journals with more than 1000 citations (30 articles published in JCR-indexed journals), several presentations at national and international conferences, and 2 patents related to my first line of investigation, plus one utility model and an additional patent currently under evaluation in the biomechanics field. I have been involved in 13 competitive research projects with public funding—being principal investigator in the six most recent projects in biomechanics—and in several privately funded contracts.

Parte C. RELEVANT MERITS (*last five years*)

C.1. Selected publications (including books)

Peña-Trabalón, A; Prado-Novoa, M; de Roy, L; Seitz, AM; Moreno-Vegas, S; Estebanez-Campos, MB; Perez-Blanca, Ana. 2026. Impact of applying traction in indentation tests for estimating axial compressive parameters for computational modeling of sutured meniscal horns. *Acta Mech Sin* 42 (3), 624717

Peña-Trabalón, A; Moreno-Vegas, S; ; Estebanez-Campos, MB; Nadal-Martinez, Fernando; Garcia-Vacas, F; Prado-Novoa, M. 2025. A Low-Cost Validated Two-Camera 3D Videogrammetry System Applicable to Kinematic Analysis of Human Motion. *Sensors* 25 (16), 4900.

Sevillano-Perez, E; Prado-Novoa, M; Postigo-Pozo, S; Peña-Trabalón, Alejandro; Guerado, E. 2024. L4 fixation is not necessary in L5-Iliac spinopelvic fixation after trauma, but coadjuvant transilio-transsacral fixation is. *Injury* 55 (3), 111378

Peña-Trabalón, A; Perez-Blanca, A; Moreno-Vegas, S; Estebanez-Campos, MB; Prado-Novoa, M. 2024. Assessment of Surrogate Models for Research on Resistance and Deformation of Repairs of the Human Meniscal Roots: Porcine or Older Human Models?. *Appl Sci.* 14(2), 670

Espejo-Reina, A; Prado-Novoa, M; Espejo-Baena, A; Estebanez-Campos, MBelén; Perez-Blanca, A. 2023. Improved tibiofemoral contact restoration after transtibial reinsertion of the anterior root of the lateral meniscus compared to in situ repair: a biomechanical study. *Int Orthop.* 47(10): 2419-2427.

Peña-Trabalón, A; Perez-Blanca, A; Moreno-Vegas, S; Estebanez-Campos, MB; Prado-Novoa, M. 2024. Age influence on resistance and deformation of the human sutured meniscal horn in the immediate postoperative period. *Front Bioeng Biotechnol* 11, 1249982

Espejo-Reina, A; Prado-Novoa, M; Peña-Trabalón, A; Perez-Blanca, A. 2022. Biomechanical

consequences of anterior root detachment of the lateral meniscus and its reinsertion. *Scientific Reports* 12(1), 6182

Prado-Novoa, M; Peña-Trabalón, A; Moreno-Vegas, S; Estebanez-Campos, MB; Espejo-Reina, A; Perez-Blanca, A. 2022. Biomechanical evaluation of an inverted fixation for ACL reconstruction with nonmetallic hardware and tibial subcortical support to increase strength at the tibial site. *J Mech Med Biol* 22(10), 2250041

Prado-Novoa, M; Pérez-Sánchez, L; Estebanez-Campos, MB; Moreno-Vegas, Sr; Perez-Blanca, A. 2022. Influence of Loading Conditions on the Mechanical Performance of Multifilament Coreless UHMWPE Sutures Used in Orthopaedic Surgery. *Materials*. 15, pp. 1-18.

Valencia, F; Prado-Novoa, M; Nadal, F. 2022. Comparative Analysis of the Motion and Kinematics of the Knee Joint Using Simulation Techniques. *Int J Adv Sci Eng Inf Technol*. 12(2): 614–620

Postigo-Pozo, S; Guerado-Parra, E; Zamora-Navas, P; Prado-Novoa, M. 2021. Biomechanical models of in vitro constructs for spinopelvic osteosynthesis. *Injury* 52: S16–S21

Simarro, M; Postigo-Pozo, S; Prado-Novoa, M; Perez-Blanca, A; Castillo-Aguilar, JJ. 2020. Analysis of contact forces between the pantograph and the overhead conductor rail using a validated finite element model. *Eng Struct* 225. 111265

Prado-Novoa, M; Perez-Blanca, A; Espejo-Reina, A; Espejo-Baena, A. 2020. Initial Biomechanical Properties of Transtibial Meniscal Root Repair are Improved By Using a Knotless Anchor as a Post-Insertion Tensioning Device. *Sci Rep* 10(1), 1748

Prado-Novoa, M; Perez-Blanca, A; Espejo-Reina, A; Ezquerro-Juanco, F; Espejo-Baena, A. 2020. Assessment of fixation for anterior cruciate ligament reconstruction using oversized suspensory devices on full-length femoral tunnels. *Clin Biomech* 76, 105008

Publicación en Revista. Espejo-reina, Alejandro; Prado-Novoa, Maria; Espejo-Baena, Alejandro. 2019. Non anatomic reinsertion after amputation of the anterior horn of the lateral meniscus. *Orthop Traumatol Surg Res*. 105(6): 1115-1118.

C.2. Research projects

PID2022-137583OB-I00. Optimization of stiffness distribution in multilevel fixation systems to prevent Proximal Junctional Kyphosis considering the correction level for Adult Spinal Deformity. Ministerio de Ciencia e Innovación. 2023-2026. Investigador Principal.

PT23/00048. Plataforma Biobanco y Biomodelos piedra angular de la Medicina de Precisión. Convocatoria Plataformas ISCIII de Apoyo a la I+D+I en Biomedicina y Ciencias de la Salud. 2024-2026. Coordinadora Plataforma Bioimpresión

P20_00294. Modelado Computacional de la Sutura Meniscal para el Análisis de Técnicas de Reparación de la Raíz. Cofinanciado Unión Europea y Junta de Andalucía. 2021-2022. 86.450,00 EUR. Investigador Principal.

UMA20-FEDERJA-116. Modelización del menisco suturado orientada a la reconstrucción de la raíz meniscal. Junta de Andalucía. 2021. 41819 EUR. Investigador Principal.

PT20/00102. Plataforma Biobanco y Biomodelos. Convocatoria Plataformas ISCIII de Apoyo a la I+D+I en Biomedicina y Ciencias de la Salud. 2021-2023. Coordinadora Plataforma Bioimpresión

RTI2018-094339-B-I00. Diseño de la Fijación en Trasplante de Menisco sin Porciones Oseas con Biomecánica Natural. Ministerio de Ciencia, Innovación y Universidades. 2019-2022. Investigador Principal.

C.3. Supervised PhD thesis (*last five years*)

Biomecánica de la reinsertión transtibial de la raíz posterior del menisco lateral de la rodilla: Avances en la técnica de reparación. 2019. Autor: Pérez De La Blanca Cobos, Ana María. Director/es: María Prado Nóvoa. Calificación : Sobresaliente Mención Cum Laude

Estudio biomecánico sobre la osteosíntesis en la disociación espinopélica. Autor: Pérez Sevillano Perez, Enrique. 2023 Director/es: Guerado Parra, Enrique; Prado Nóvoa, María. Calificación : Sobresaliente Mención Cum Laude

Biomechanical study of the suture-affected area of the meniscal horn in the context of root detachment repairs. Autor: Peña Trabalon, Alejandro. 2024. Director/es: Prado Nóvoa, María, Pérez De La Blanca Cobos, Ana María. Calificación : Sobresaliente Mención Cum Laude. Mención internacional

Estudio biomecánico de las consecuencias de la lesión de la raíz anterior del menisco lateral y del efecto de su reparación. Autor: Espejo Reina, Alejandro. 2025. Director/es: Prado Nóvoa, María; Guerado Parra, Enrique; . Calificación : Sobresaliente Mención Cum Laude. M