Light Therapy for Healing: A Nurse's Guide to Photobiomodulation in Wound Care

Raymond Fisher Schoeman

Author: Raymond Fisher Schoeman

ISBN: 9789465209838

First publication: 2025

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any from or by any means – for example, electronic, photocopy, and recordings – without the prior written permission of the author. The only exception is brief quotations in printed reviews.

© Raymond Fisher Schoeman

To Elma McKenzie — A true inspiration. Thank you for your friendship and kindness.

Foreword

In the ever-evolving landscape of healthcare, nurses stand at the forefront of innovation, compassion, and hands-on healing. As wound care becomes increasingly complex, integrating emerging, evidence-based technologies into daily practice is not just beneficial—it is essential. Photobiomodulation (PBM), once a fringe concept, has now earned its place as a validated and safe adjunct in the management of both acute and chronic wounds.

This book arrives at a timely moment. The burden of non-healing wounds—diabetic foot ulcers, pressure injuries, radiation burns, and more—continues to strain healthcare systems and challenge providers. Nurses, being the primary caregivers in wound care protocols, require not only access to the best tools, but also a deep understanding of how and why those tools work. That is precisely what this guide provides.

Rooted in scientific literature, reinforced by peer-reviewed case studies, and illustrated with clear visuals and clinical checklists, this volume bridges the gap between theory and practice. It does not promise a miracle cure. Instead, it offers a comprehensive, honest, and practical exploration of how PBM can complement conventional wound care when applied with skill and clinical judgement.

This guide also pays homage to the pioneers of light therapy, from ancient civilizations that harnessed sunlight for healing, to researchers like Tina Karu and the contemporary teams at NASA who paved the way for modern PBM applications. It connects history, science, and clinical utility with a narrative that is as informative as it is empowering.

Whether you are a nurse new to PBM or an experienced practitioner seeking to optimize your protocols, this book is a valuable companion. It encourages a mindset of inquiry, invites evidence-informed action, and places the patient—the whole person—at the center of every intervention.

May this book inspire confidence, deepen knowledge, and ultimately improve patient outcomes through the thoughtful integration of light into nursing care.

Table of Contents

Part 1: Introduction to Photobiomodulation and Wound Care1	.7
Why Wounds Stall: Pathophysiological Insights1	.8
Understanding the Anatomy: Skin Structure and Cell Players1	.9
Pressure Injuries vs. Acute Wounds: Common Pathways, Different Origins	
Why Chronic Wounds Persist for Months to Years2	21
Photobiomodulation: A New Tool in Wound Resolution2	22
Part 2: Mechanism of Action - Photobiomodulation and Wavelength Penetration2	23
Clarification: Monochromatic Light and Targeted Effects2	25
Part 3: Clinical Applications of Photobiomodulation in Wound Care2	27
General Treatment Parameters2	28
Wavelength Selection2	28
Dosage (Energy Density)2	29
Frequency of Application3	30
Contact vs. Non-Contact Technique3	31
Device Type3	31
Safety Considerations3	31
Integrating PBM into Standard Wound Care Protocols3	32
Nursing Responsibilities During and After PBM3	34
Diabetic Foot Ulcers3	35
Overview and Pathophysiology3	35