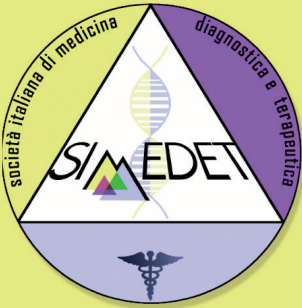


VOLUME 4  
NUMERO 1

2021



**SIMEDET**

*"organo ufficiale della"*

**SOCIETÀ ITALIANA DI MEDICINA  
DIAGNOSTICA E TERAPEUTICA**



|IJPDTM|

# ITALIAN JOURNAL OF PREVENTION, DIAGNOSTIC AND THERAPEUTIC MEDICINE



IJPDTM.IT



SIMEDET.EU



PODCAST

I J P  
D T M

**IJPDTM Vol4. N°1. 2021**

*Italian Journal of Prevention, Diagnostic and Therapeutic Medicine.*

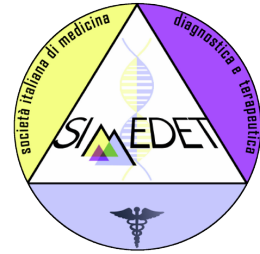
*For personal use only. No other uses without permission.*

*Copyright © 2021 Simedet. All rights reserved.*



# Italian Journal of Prevention, Diagnostic and Therapeutic Medicine

Rivista Ufficiale della Società Italiana di Medicina Diagnostica e Terapeutica  
(SIMEDET)



# JOURNAL BOARD



**DIRETTORE RESPONSABILE / MANAGING EDITOR**  
Giovanni Maria Vincentelli (Roma)



**DIRETTORE EDITORIALE / EDITOR IN CHIEF**  
Maria Erminia Macera Mascitelli (Firenze)



**RESPONSABILE SCIENTIFICO / SCIENTIFIC DIRECTOR**  
Giuseppe Luzi (Roma)

## COMITATO EDITORIALE / EDITORIAL BOARD

Fernando Capuano (Roma)  
Paolo Diego L'Angiocola (Gorizia)  
Maria Erminia Macera Mascitelli (Firenze)  
Manuel Monti (Assisi)

## COMITATO SCIENTIFICO E REVISORI / SCIENTIFIC BOARD & REVIEWERS

Cesar Ivan Aviles Gonzalez (Cagliari)	• Roberto Marchetti (Roma)
Lucia Baratto (Stanford USA)	• Marco Masoni (Firenze)
Alessia Cabrini (Padova)	• Manuel Monti (Assisi)
Gioia Calagreti (Città di Castello)	• Giuseppe Murdolo (Perugia)
Fabio Canini (Velletri)	• Chilufya Mwaba (Treviso)
Fernando Capuano (Roma)	• Antonio Panti (Firenze)
Enza Giglione (Vercelli)	• Michele Paradiso (Roma)
Renza Guelfi (Firenze)	• Rosamaria Romeo (Roma)
Paolo Diego L'Angiocola (Gorizia)	• Tomas Salerno (Miami USA)
Giuseppe Luzi (Roma)	• Riccardo Tartaglia (Firenze)
Maria Erminia Macera Mascitelli (Firenze)	• Sergio Timpone (Roma)
	• Giovanni Vincentelli (Roma)

## TYPESETTER

Sergio Monfrinotti (Roma)

▲  
L'Italian Journal of Prevention, Diagnostic and Therapeutic Medicine (IJPDTM) è la rivista ufficiale della Società Italiana di Medicina Diagnostica e Terapeutica (SIMEDET).

IJPDTM ha il fine di promuovere la ricerca, la cultura e l'aggiornamento sia all'interno che all'esterno della società, coinvolgendo le diverse figure professionali che ne fanno parte (medici, infermieri professionali, tecnici di laboratorio biomedico, tecnici di anatomia patologica...).

L'interdisciplinarietà rappresenta infatti un momento di crescita culturale e professionale, di grande utilità nella pratica clinica, sia per migliorare la gestione della cura del paziente che l'utilizzo delle risorse a disposizione.

Inoltre, il confronto programmatico delle diverse figure professionali che ruotano intorno alla figura del paziente è in grado, grazie alla ricerca di un percorso condiviso, di favorire la stesura di protocolli e/o linee guida più facilmente percorribili.

Le principali aree di interesse della rivista sono la medicina interna e la medicina d'urgenza con coinvolgimento pertanto di numerose aree quali la rianimazione, la cardiologia, la endocrinologia, la pneumologia, la nefrologia, la neurologia, la gastroenterologia, la ematologia, le malattie infettive..., come ma anche la medicina preventiva e quella di base.

Gentilissimi Colleghe e Colleghi,

E' con piacere comunicarVi che il prof Giuseppe Luzi ha accettato l'incarico di responsabile scientifico della rivista Italian Journal of Prevention, Diagnostic and Therapeutic Medicine.

Il prof Giuseppe Luzi, Specialista in Allergologia-Immunologia clinica, Malattie infettive, Oncologia e Medicina di laboratorio, professore associato confermato in Medicina interna presso la Sapienza – Università di Roma. Fellowship (1983–1984) presso la UAB (University of Alabama Birmingham), è autore di oltre 200 lavori su riviste internazionali e italiane, libri e saggi nel settore delle patologie del sistema immunitario e dei deficit immunitari congeniti e acquisiti (AIDS e sindromi correlate), con ricerche in particolare nell'ambito della regolazione della risposta immunitaria e della sintesi degli anticorpi.

L'IJPDTM ha il fine di promuovere la ricerca, la cultura e l'aggiornamento, sia all'interno che all'esterno della Società, coinvolgendo le diverse figure professionali che ruotano intorno alla Sanità e il prof Luzi, grande personalità scientifica, contribuirà sicuramente a costruire una solida posizione della rivista all'interno del panorama della letteratura medico-scientifica internazionale.

Direttore Editoriale  
Maria Erminia Macera Mascitelli

# SOMMARIO

## 8 EDITORIAL

NON DIMENTICHIAMO ANGELO CELLI: SCIENZIATO CONTRO LA MALARIA E UOMO CONTRO LA POVERTÀ .....  
AUTORE: *GIUSEPPE LUZI*

## 14 REVIEW

EMOTRASFUSIONI E VIRUS TRASMISSIBILI .....  
AUTORI: *MARIO PEZZELLA, ROSSELLA B. CASTRICA*

## 48 REVIEW

IL PROFESSIONISTA SANITARIO TECNICO DI RADIOLOGIA MEDICA IN CARDIOLOGIA INTERVENTISTICA  
ALLA LUCE DEL NUOVO D. LGS. 101/2020 .....  
AUTORE: *ANTONIO DI LASCIO*

## 54 ORIGINAL ARTICLE

ANALISI COSTO-EFFICACIA DEL TAPENTADOLO VERSUS OSSICODONE/NALOXONE  
— NELLE FORMULAZIONI BRANDED E GENERICHE — SU PAZIENTI CON DOLORE MUSCOLOSCHIELETICO .....  
AUTORI: *RUGGERI M., SIGNORINI A., CARAVAGGIO S., ROSIELLO F.*

## 65 REVIEW

TUMORI CUTANEI E LORO PREVENZIONE .....  
AUTORE: *BIAGIO DIDONA*

## 72 ORIGINAL ARTICLE

THE OFF-LOADING POSTURE SYSTEM: AN AID IN THE DEVELOPMENT OF TREATMENT FOR PRESSURE  
ULCERS IN PEOPLE WITH SCI? PROSPECTIVE OBSERVATIONAL STUDY .....  
AUTORI: *CRIVELLI N., CAFUERI G., ZUCCHIATTI N.*



- **Keywords:**
- pressure ulcers, spinal cord injury,
- wheelchair, sitting posture, rehabilitation care,
- occupational therapy
- **Abbreviation:**
- ASIA american spinal injury association
- EPUAP european pressure ulcer advisory panel
- OT occupational therapy
- PTs patients
- PUs pressure ulcers
- SCI spinal cord injury

**Info Authors :**

<sup>1</sup> Master in Rehabilitation Science and Occupational Therapy  
Unipolare ASST GOM Niguarda Spinal Unit, (Milan, Italy)

<sup>2</sup> Doctor in Orthopaedic Techniques  
Ortopedia Pessina Annamaria, (Casatenovo, LC, Italy)

**Acknowledgments :**

We thank Bodytech SRL who gave us cushions and backrest we needed for all patients and Mr. Alessandro Crippa, Doctor in Orthopaedic Techniques who made us available the Novel Pliance System Technology

**Acknowledgments of financial support :**

None

**Suppliers :**

JAVA Cushion & Backrest. Ride Designs, distributor for Italy Bodytech srl  
NOVEL PLIANCE SYSTEM, interface pressure mapping system

Crivelli N. <sup>1</sup>, Cafueri G. <sup>1</sup>, Zucchiatti N. <sup>2</sup>

## THE OFF-LOADING POSTURE SYSTEM:

### AN AID IN THE DEVELOPMENT OF TREATMENT FOR PRESSURE ULCERS IN PEOPLE WITH SCI? PROSPECTIVE OBSERVATIONAL STUDY

## ABSTRACT

#### INTRODUCTION

The problem of pressure ulcers (PU) in the people with spinal cord injury is very common.

The specific preventive measures, first of all the trunk-pelvis posture system, have important relevance as regards the prevention and / or treatment of PUs, in people who use the wheelchair as the main device for their own mobility so these postural devices need specific study in terms of choice, identification and correct use in order to prevent more effectively one of the main causes of hospitalization.

For many wheelchair users, the risk of PUs can be reduced by choosing an optimal seat cushion.

#### OBJECTIVE

To measure the effectiveness of the off-loading posture system, as an aid for healing of stage I-II-III PUs in people with SCI.

#### DESIGN

Prospective observational study. This study is for exploratory purposes only.

#### SETTING

PTs were hospitalized at the spinal unit over 8 months in 2019.

#### PARTICIPANTS

15 people with SCI, from 14 to 72 years old without active movement under the lesion level.

#### INTERVENTION

Pressure sensor technology system was used to measure the pressures generated while sitting in the wheelchair.

Main outcome measures: the forces and pressures exerted by the patient in various situations were

#### MEASURED

Static sitting/dynamic sitting during the push phase both on the backrest and the wheelchair seat; EPUAP scale to evaluate the skin's state of health in the areas subject to PUs.

#### RESULTS

The posture system with the load-relieving cushion brought benefits for the treatment of ischial PUs: all of them healed by the end of the study and no recurrence occurred.

#### CONCLUSION

If we consider that a high lesion level leads to less postural stability and less trunk balance: the shape of the cushion combined with the support of a properly installed backrest had a positive effect both on posture and on the treatment of PUs.

The load-relieving cushion can promote the healing of stage I-II ischial PUs in less than 8 weeks, in people with SCI and at high risk of developing PUs.

Maybe the cushion is therefore a valid alternative to the traditional communicating air-cell cushion.

## INTRODUCTION

Those using wheelchairs as their primary means of movement are at risk of developing pressure ulcers (PUs), which occur mainly in the ischial tuberosity, greater trochanteric and sacral regions.

By definition, pressure ulcers are caused by external forces on tissue, often in the area of bony prominences.

Pressure ulcers are recognized as a significant secondary complication in wheelchair users and the prevalence of pressure ulcers in this type of user has been well documented <sup>(1) (2)</sup>.

It is clear that the problem of pressure ulcers in individuals with spinal cord injuries is very frequent, especially with regard to long-term hospitalization <sup>(3) (4)</sup> and furthermore, there is no single shared intervention method, which also involves occupational therapy, to address the problem both in terms of prevention and therapeutic treatment <sup>(5)</sup>.

Specific prevention measures, primarily the trunk-pelvis posture system, are highly relevant with regard to the prevention and/or treatment of pressure ulcers <sup>(5)</sup> in people using a wheelchair as their main mobility aid.

Therefore, they deserve careful study in terms of choice, identification and correct use in order to better and more effectively prevent one of the main causes of hospitalization (and the related social-health cost).

Immobility due to spinal cord injury (SCI) impairs the vital functions and this occurs even more often when the patient's level of consciousness decreases <sup>(6)</sup>.

Pressure ulcers (PU) are the result of excessive pressure applied by two hard surfaces (one of which is usually a protruding bone) on the tissue in-between them.

This situation can evolve towards major tissue loss, with complications such as septic infection, osteomyelitis, or enterocutaneous fistulas <sup>(7)</sup>.

In the past, pressure ulcers were one of the causes of death in para-quadrilegics <sup>(8)</sup>.

The pressure must be such as to close the capillaries or arterioles that moisten the tissue and the time must be sufficient to create thrombosis of the small arterial vessels followed by ischaemia and subsequent death of the tissue <sup>(9)</sup>.

In the English-speaking world, various investigations studying skin lesions have been conducted in hospitals and regionally: the data relating to hospitals show approximate prevalence values between around 8% and 22%.

In particular, for certain population subgroups (quadriplegics, bedridden elderly people, patients admitted to ICU) the risk is higher and the prevalence can be very high (33-66%) <sup>(10)</sup>.

PUs are one of the most frequent complications in patients with spinal cord injuries due to the total or partial loss of mobility and sensitivity, contributing significantly to increasing healthcare costs (for treatment and care; PUs complicated by osteomyelitis result in prolonged hospitalization with consequent delay in the implementation of rehabilitation programmes) and reduces these individuals' quality of life <sup>(11)</sup>.

To differentiate between the type and severity of ulcers, a European Pressure Ulcer Advisory Panel (EPUAP) classification system has been designed [EPUAP guidelines].

This classification divides the ulcers into 4 broad categories and can be used as an initial ulcer assessment scale, to identify its level of severity.

The scale identifies 4 levels of severity.

At present, we can confirm that the literature contains an abundance of programmes that describe in detail how to prevent PUs, but a total lack of data on the effectiveness of the proposed measures <sup>(12)</sup>, and this study fits precisely within this framework.

Currently, the approach to initial recovery from bed confinement during hospitalization and the final supply of postural support involves the use and/or prescription of a 10 cm-deep interconnected air cell cushion, to be used on the seat of the wheelchair,

for all patients who have or have had a PU in the ischial, sacral and/or trochanteric area, since these cushioning technologies, based on a buoyancy principle, minimize the peak pressures under the bony prominences of the pelvis, in particular the ischial tuberosities, thus distributing the pressure as evenly as possible over as large a contact area as possible <sup>(13)</sup>.

This approach is based on experience, but to date there are doubts about the appropriateness of always using this device for all patients due to the difficulty of managing the correct inflation of the cushion <sup>(14)</sup>, and because of the limitations it presents for those who need more substantial postural stability.

Furthermore, although the interconnected air-cell cushions are useful for reducing the pressure under these bony prominences <sup>(15)</sup>, the pressure observed in these areas can still remain unacceptably high <sup>(16) (17)</sup>.

Therefore, it may be useful and necessary to completely relieve these high-risk areas with a contoured off-loading posture system, to effectively reduce the risk of pressure ulcers in these critical areas.

The literature contains a study that considers, and seeks to measure, the effectiveness of the off-loading cushion for the prevention of PUs in people with spinal cord injuries and compares its effectiveness with the traditional interconnected air cell cushion <sup>(18)</sup>.

For many wheelchair users, the risk of PUs can be substantially reduced thanks to the choice of an optimal seat cushion <sup>(19) (20)</sup>.

The choice of wheelchair cushion is particularly important, mainly for its effect on 2 factors: pressure of the tissue interface <sup>(21)</sup> and sitting position <sup>(22) (23)</sup>; in addition to the implications of body posture on musculoskeletal health and upper limb mobility.

## OBJECTIVES

To measure the effectiveness of the RIDE-JAVA off-loading trunk-pelvis posture system as an aid for healing of stage I-II (III) pressure ulcers in hospitalized people with recent spinal cord injuries.

## METHODS

The study can be defined, in accordance with current legislation, as a prospective observational study. The study was conducted according to the guidance given by Good Clinical Practices.

The study was approved by the Ethics Committee of the hospital.

### POPULATION STUDIED

The project involved recruiting 15 people with spinal cord injuries, hospitalized at the spinal unit of ASST GOM Niguarda over 8 months in 2019.

### INCLUSION CRITERIA

All subjects were required to meet the following criteria before being enrolled in the study:

- diagnosis of paraplegia or quadriplegia (ASIA<sup>1</sup> A or B)
- presence of existing I, II, or III stage PUs (without recommendation for surgery)
- absence of structured deformities greater than 2 cm scoliosis deviation and/or pelvic obliquities and/or hip paraosteopathy)
- low or zero risk assessment of the pressure zone on the ischiatic, trochanteric and sacral zones or spinous processes, as indicated by the Novel Pliance pressure measurement system
- signed, informed consent to collaborate in all the study procedures

<sup>1</sup>ASIA/IMSOP (1992) *International Standards for Neurological and Functional Classification of spinal Cord Injury - revised 1992*. American Spinal Injury Association, Chicago U.S.A

## EXCLUSION CRITERIA

- presence of existing III or IV stage PUs (with recommendation for surgery)
- presence of structured deformities greater than 2 cm scoliosis deviation and/or pelvic obliquities and/or hip paraosteoarthritis)
- high risk assessment of the pressure zone on the ischiatic, trochanteric and sacral zones or spinous processes, as indicated by the Novel Pliance pressure measurement system.

## MATERIALS USED

Off-loading posture system by Ride Designs composed of:

JAVA cushion and relative postural accessories.  
JAVA Backrest and relative postural accessories.



FIGURA 1. The off-loading cushion JAVA



FIGURA 2. Java backrest

## INSTRUMENTATION

The Novel Pliance technology system for wheelchairs was used to measure the pressures generated while sitting in the wheelchair.

This tool offers the most advanced technology for measuring static and dynamic pressure in wheelchairs, offering a dynamic quantification of pressure points in the wheelchair sitting position; this pressure-measuring mat includes both the mat for the cushion and for the back-support, and is currently a scientifically valid and internationally approved device for the research and publication of data in scientific articles <sup>(24)</sup>.

## VARIABLES MEASURED

- amount of pressure in the support areas using the Novel Pliance technology system for wheelchairs
- skin status in the PU zone using special EPUAP and PUSH TOOL 3.0 (the latter where significant) dedicated assessment scales.

## PROTOCOL

### Day 1 (T0)

Explanation of the study and the written informed consent.  
Checking of inclusion/exclusion criteria  
Postural evaluation with regard to any deformities affecting the spine and/or limbs.  
Collection of demographic data and medical history  
Verification of previous and current treatments.  
Evaluation of existing PUs using the EPUAP scale.

### Day 7 (T1)

Evaluation of existing PUs using the EPUAP scale.  
Provision of a JAVA cushion with appropriate measurements for both the user and his/her wheelchair. Provision of a JAVA postural backrest with appropriate measurements for the user and shaped according to the patient's comfort needs and properly installed on his/her wheelchair.  
Measurement of pressure in the wheelchair support areas using Novel Pliance System technology.



**Day 14 (T2)**

Evaluation of existing PUs using the EPUAP scale.

**Day 21 (T3)**

Evaluation of existing PUs using the EPUAP scale.

**Day 28 (T4)**

Evaluation of existing PUs using the EPUAP scale.

**Day 35 (T5)**

Evaluation of existing PUs using the EPUAP scale.

**Day 42 (T6)**

Evaluation of existing PUs using the EPUAP scale.

**Day 49 (T7)**

Evaluation of existing PUs using the EPUAP scale.

**Day 56 (T8)**

Evaluation of existing PUs using the EPUAP scale.

Measurement of pressure in the wheelchair support areas using Novel Pliance System technology.

**OUTCOME MEASUREMENT**

This study is for exploratory purposes only.

The forces and pressures exerted by the patient in various situations were measured:

- static sitting
- dynamic sitting during the push phase

both on the backrest and the wheelchair seat; the skin's state of health was also assessed in the areas subject to PUs, at time T1 (after 1 week), T2 (after 2 weeks), T3 (after 3 weeks), T4 (after 4 weeks), T5 (after 5 weeks), T6 (after 6 weeks), T7 (after 7 weeks) and T8 (after 8 weeks).

Descriptive statistics of the data collected were subsequently produced.

**RESULTS****TABLE 1: AGE, TYPE OF LESION AND WEIGHT (KG) OF THE STUDY POPULATION**

TABLE 1 shows the study population.

The age, gender, weight (expressed in kg) and the level of spinal cord injury according to the ASIA scale are specified for each user.

The population includes 15 subjects between the ages of 14 and 72, 13 men and 2 women; 10 people with quadriplegia and 5 people with paraplegia.

13 users have a complete spinal cord injury (ASIA A) and 2 people have an incomplete spinal cord injury (ASIA B and C) with no active movement of the muscles under the lesion level.

**TABLE 2: ZONE AND GRADE OF PU (EPUAP ASSESSMENT) OF EACH PATIENT**

TABLE 2 shows the PU characteristics detected at time T0 (time of suitability assessment and enrolment in the study), in particular indicating the areas of affected skin and the grade of lesion according to the EPUAP assessment [bibliographical reference].

6 subjects have ischiatic PUs: 4 of them have PUs on both ischia, 2 subjects on just one ischium. 8 subjects have only sacral PUs; finally, 1 subject has lesions on both sacrum and one ischium.

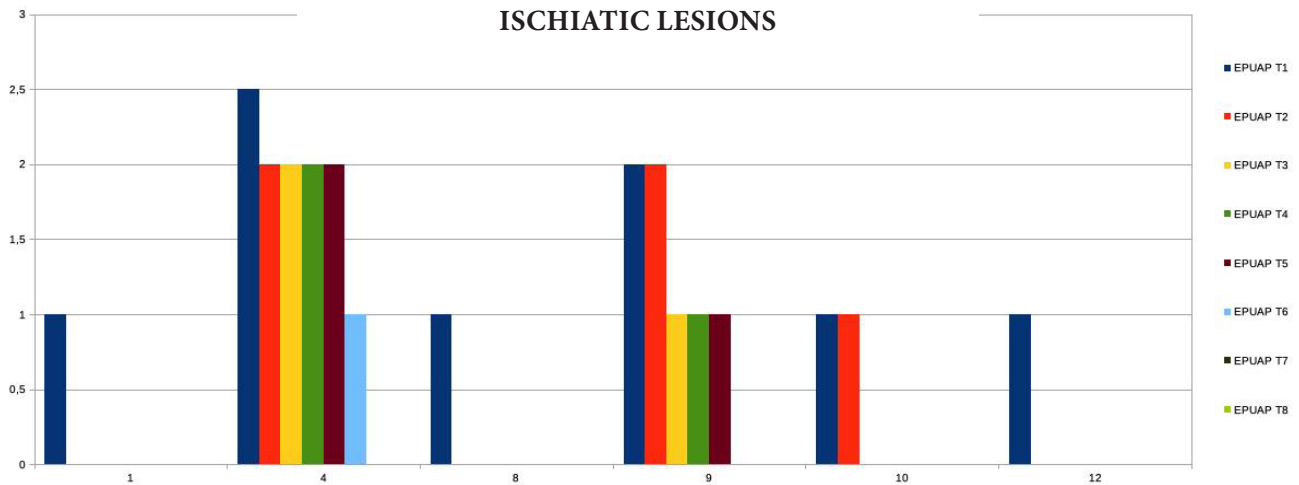
According to the EPUAP evaluation at T0, 5 subjects present grade 3 sacral PUs, 4 subjects present grade 2 PUs, 2 of these in the sacral area and the remaining two in the ischiatic areas. 6 subjects have a grade 1 lesion, of which 4 are ischiatic and 2 sacral.

**TABLE 1 - AGE, TYPE OF LESION AND WEIGHT (KG) OF THE STUDY POPULATION**

PATIENT	AGE	GENDER	WEIGHT (KG)	ASIA ASSESSMENT	DATE OF INJURY
1	15	M	38	T4 ASIA A	02/2019
2	62	M	65	T5 ASIA A	09/2018
3	20	M	66	T4 ASIA A	09/2018
4	45	F	51	C6 ASIA A	05/2014
5	23	M	45	C4 ASIA A	03/2019
6	72	M	70	D4 ASIA A	04/2019
7	22	M	75	C5 ASIA A	08/2015
8	23	M	55	C5 ASIA A	07/2019
9	47	F	50	C5 ASIA A	09/1993
10	48	M	70	C6 ASIA A	07/2019
11	40	M	82	D7 ASIA A	08/2019
12	28	M	50	C5 ASIA A	06/2019
13	14	M	42	C5 ASIA B	08/2019
14	54	M	77	C6 ASIA C	05/2019
15	16	M	67	C4 ASIA A	08/2019

**TABLE 2 - ZONE AND GRADE OF PU (EPUAP ASSESSMENT) OF EACH PATIENT**

PATIENT	PU ZONE	EPUAP T0
1	R/L ISCHIUM	1
2	SACRUM	3
3	SACRUM	3
4	R/L ISCHIUM	2
5	SACRUM	1
6	SACRUM	2
7	SACRUM and R. ISCHIUM	3
8	R/L ISCHIUM	1
9	R. ISCHIUM	2
10	R/L ISCHIUM	1
11	SACRUM	3
12	R. ISCHIUM	1
13	SACRUM	1
14	SACRUM	3
15	SACRUM	2



GRAPH 1. Progress of ischial PUs from T1 to T8

Graph 1 outlines PU progress in the ischiatic areas from T1 to T8, the subjects are reported on the abscissa, in order of grade of lesion according to the EPUAP evaluation over the weeks.

The ischial pressure lesions were completely healed in all cases. The EPUAP scale grade 1 lesions healed within 2 weeks and none of them recurred during the entire period using the cushion.

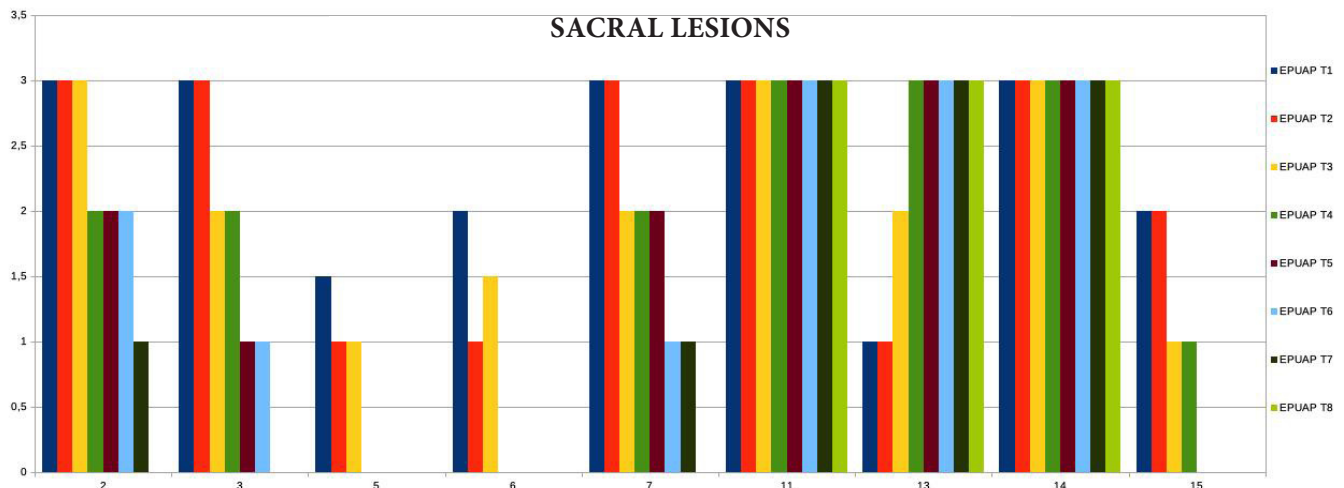
The EPUAP scale grade 2 or above lesions healed over a longer period, however less than 7 weeks and equally none of them recurred during the entire period using the cushion.

Graph 2 outlines the progress of sacral PUs from T1 to T8.

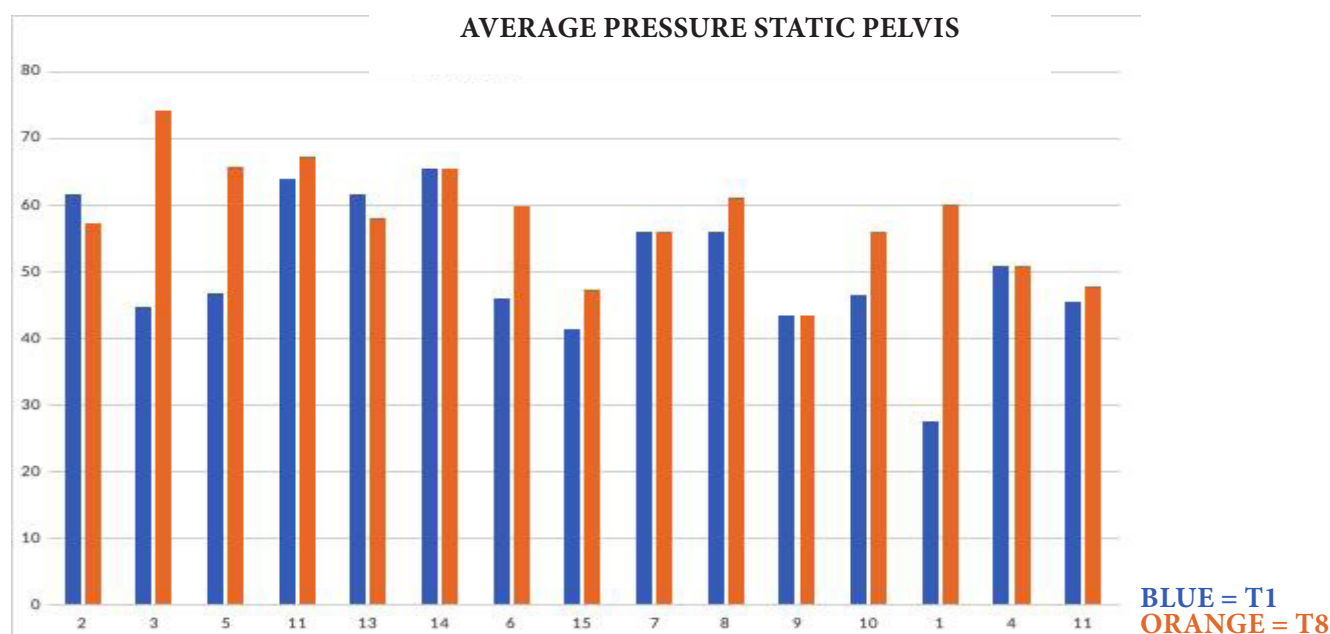
2 subjects with grade 2 PUs showed complete healing at time T8.

The 5 grade 3 sacral lesions did not deteriorate over the 8 weeks, but there was no progressive improvement process comparable to that of cases with grade 2 PUs.

A single case of grade 1 lesion at T1 has progressively deteriorated over the weeks.



GRAPH 2. Progress of sacral PUs from T1 to T8



GRAPH 3. Detection of static pressure of the pelvis on the cushion, at T1 and T8

As shown in **Graph 3**, pressure was measured in all patients using the NOVEL PLIANCE SYSTEM at T1 and T8.

In all patients the apparatus average pelvic pressure was always below the individual risk threshold, which means the device can be considered safe in terms of proper use; an essential requirement for definitively recruiting subjects to the study.

## DISCUSSION

Principally, it is interesting to note the benefits that the posture system with the load-relieving cushion has brought for the treatment of ischial PUs: in fact, all of them healed by the end of the study and no recurrence occurred.

If we then consider that the individuals with ischial PUs are also subjects with body weight less than or equal to 60 kg, hence very thin, with hypotrophy of the lower limbs (**TABLE 1**) and therefore more at risk, we can say that the cushion effectively removed the load from bony prominences. Furthermore, if we consider that a high lesion level leads to less postural stability and less trunk balance: the shape of the cushion combined with the support of a properly installed postural backrest again has a positive effect both on posture and on the prevention and treatment of PU. It is to be remembered that grade 2 lesions healed in less than 6/7 weeks and grade 1 lesions healed in less than 2 weeks.

Intuitively we can understand why the progress of the sacral PUs cannot be compared to the ischiatic PU: in the case of sacral PU, maximum care and attention is required in the choice and use of both mattress and/or bed; aspects which we did not address.

Those with sacral PU enrolled in this study are however considered to be at high risk of developing PU and it is significant to note that none of them, using the load-relieving posture system, showed changes in their skin at the ischial level and at the same time the sacral PU never deteriorated.

This study did not make a comparison with other cushions (e.g. with communicating air-cell cushions), because it involves acute patients, many of them still did not have a personal cushion, let alone a personal wheelchair.

The sample included individuals at the onset of spinal cord injury and rehabilitation treatment, or those hospitalized due to complications and therefore undergoing a complete re-evaluation of both posture system and wheelchair, according to their particular PU.

## STUDY LIMITS

Clearly it is a small sample, however there is variety in terms of gender, age, grade and type of lesion.

We believe that the load-relieving cushion's function would be extremely beneficial in a larger population than this study; however, further tests would be needed to support this hypothesis.

In this study, we made no effort to quantify or evaluate the characteristics of the sitting posture (e.g. pelvic inclination in the sagittal plane); however, this can also be helpful in researching the potential benefits of a customised load-relieving cushion.

Finally, the data obtained could be used to plan a prospective study to assess the statistical and clinical significance of the differences of the various measurements between patients.



## CONCLUSION

It is reasonable to think that the load-relieving cushion is capable of promoting the healing of stage I, II and III ischial pressure lesions in less than 8 weeks, in people with spinal cord injury and at high risk of developing PU.

It is plausible to imagine that the same cushion is therefore a valid, preventative alternative to the traditional communicating air-cell cushion.

The load-relieving cushion also offers postural stability due to its shape, which is a valuable resource for people with complete cervical spinal cord injury, especially during the acute phase, in which they present weakness, hypotrophy, poor posture control and high risk of developing PU.

## REFERENCE

- National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel, Pan Pacific Pressure Injury Alliance. *Prevention and Treatment of Pressure Ulcers: Quick Reference Guide*. Osborne Park, Australia: 2014 .
- Regan M, Teasell RW, Keast D, Aubut JL, Foulon BL, Mehta S. *Pressure Ulcers Following Spinal Cord Injury*. 2010 .
- Cao Y, DiPiro N, Krause JS. *Health factors and spinal cord injury: a prospective study of risk of cause-specific mortality*. *Spinal Cord*. 2019 Feb 25. doi: 10.1038/s41393-019-0264-6 .
- Krause JS, Murday D, Corley EH, DiPiro ND. *Concentration of Costs Among High Utilizers of Health Care Services Over the First 10 Years After Spinal Cord Injury Rehabilitation: A Population-based Study*. *Arch Phys Med Rehabil*. 2018 Nov 23. pii: S0003-9993(18)31474-6. doi: 10.1016/j.apmr.2018.10.020 .
- Sprigle S, Sonenblum SE, Feng C. *Pressure redistributing in-seat movement activities by persons with spinal cord injury over multiple epochs*. *PLoS One*. 2019 Feb 13;14(2): e 0210978. doi: 10.1371/journal.pone.0210978. eCollection 2019 .
- Cowan LJ, Ahn H, Flores M, Yarrow J, Barks LS, Garvan C, Weaver MT, Stechmiller J. *Pressure Ulcer Prevalence by Level of Paralysis in Patients with Spinal Cord Injury in Long-term Care*. *Adv Skin Wound Care*. 2019 Mar;32(3):122-130. doi: 10.1097/01.ASW.0000553109.70752.bf .
- Kosiak M. *Etiology and pathology of ischemic ulcers*. *Arch Phys Med Rehabil*. 1959; 40(2):62-9. PMID: 13618101 .
- Daniel RK, Wheatley D, Priest D. *Pressure sores and paraplegia: an experimental model*. *Annals of plastic surgery*. 1985; 15(1):41-9. PMID: 4083714 .
- Allman RM, Laprade CA, Noe LB. *Pressure sores among hospitalized patients*. *Ann. Intern. Med*. 1986;105: 337-342 .
- King RB1, Porter SL, Vertiz KB. *Preventive skin care beliefs of people with spinal cord injury*. *Rehabil Nurs*. 2008 Jul-Aug;33(4):154-62 .
- Garber SL, Rintala DH, Hart KA, et al. *Pressure ulcer risk in spinal cord injury: predictors of ulcer status over 3 years*. *Arch Phys Med Rehabil* 2000;81: 465-71 .
- Hammell KW, Miller WC, Forwell SJ, Forman BE, Jacobsen BA. *Managing fatigue following spinal cord injury: a qualitative exploration*. *Disabil Rehabil*. 2009;31(17):1437-45 .
- Collins F. *A practical guide to wheelchair cushions*. *Int J Ther Rehabil* 2007; 14:557-61 .
- Park MO, Lee SH. *Effects of seating education and cushion management for adaptive sitting posture in spinal cord injury: Two case reports*. *Medicine (Baltimore)*. 2019 Jan;98(4):e14231. doi: 10.1097/MD.00000000000014231 .
- Yuen HK, Garrett D. *Comparison of three wheelchair cushions for effectiveness of pressure relief*. *Am J Occup Ther* 2001;55: 470-5 .
- Ferguson-Pell M, Wilkie I, Reswick J, Barbenel J. *Pressure sore prevention for the wheelchair-bound spinal injury patient*. *Paraplegia* 1980; 18:42-51 .
- Rosenthal MJ, Felton RM, Hileman DL, Lee M, Friedman M, Navach JH. *A wheelchair cushion designed to redistribute sites of sitting pressure*. *Arch Phys Med Rehabil* 1996;77:278-82 .
- Crane B, Winger M, Call E. *Orthotic-Style Off-Loading Wheelchair Seat Cushion Reduces Interface Pressure Under Ischial Tuberosities and Sacrococcygeal Regions*. *Arch Phys Med Rehabil*. 2016 Nov;97(11):1872-1879. doi: 10.1016/j.apmr.2016.04.004. Epub 2016 Apr 27 .
- Brienza DM, Kelsey S, Karg P, et al. *A randomized clinical trial on preventing pressure ulcers with wheelchair seat cushions*. *J Am Geriatr Soc* 2010;58: 2308-14 .
- Reddy M, Gill SS, Rochon PA. *Preventing pressure ulcers: a systematic review*. *JAMA* 2006;296: 974-84 .
- Brienza DM, Karg PE, Geyer MJ, Kelsey S, Trefler E. *The relationship between pressure ulcer incidence and buttock-seat cushion interface pressure in at-risk elderly wheelchair users*. *Arch Phys Med Rehabil* 2001;82: 529-33 .
- Hobson DA. *Comparative effects of posture on pressure and shear at the body-seat interface*. *J Rehabil Res Dev* 1992;29: 21 .
- Koo TK, Mak AF, Lee Y. *Posture effect on seating interface biomechanics: comparison between two seating cushions*. *Arch Phys Med Rehabil* 1996;77: 40-7 .
- Candy H.Y. Lai, Cecilia W.P. Li-Tsang. *Validation of the Pliance X System in measuring interface pressure generated by pressure garment*. *Burns, Volume 35, Issue 6, 2009 Sep; 35(6):845-51* doi: 10.1016/j.burns.2008.09.013.Epub 2009 May 29 .



# IJPDTM

Istruzioni per gli autori

«*Italian Journal of Prevention, Diagnostic and Therapeutic Medicine (IJPDTM)*» è una rivista scientifica che pubblica lavori originali, rassegne, brevi note e lettere su argomenti di medicina, dalla prevenzione alla diagnosi e cura, alla ricerca. La rivista è rivolta non solo ai medici ma anche agli esercenti le professioni sanitarie quali i tecnici di laboratorio biomedico, di anatomia patologica, agli infermieri e a tutte le professioni sanitarie regolamentate per legge.

I contributi non devono essere già stati pubblicati o presentati ad altre riviste. Gli articoli, per favorire una maggiore diffusione, potranno essere presentati in lingua sia inglese (preferibile) che italiana, a parte l'abstract che andrà sempre redatto in ambedue le lingue.

Tutti gli articoli devono essere inizialmente inviati per posta elettronica (alla mail: [scientifico@simedet.eu](mailto:scientifico@simedet.eu)) alla Redazione della Rivista dove saranno sottoposti all'attenzione dei Revisori che si riservano la facoltà di suggerire modifiche o di respingerli. Gli Autori verranno informati delle motivazioni che hanno portato la Redazione a formulare suggerimenti o giudizi negativi. Le opinioni espresse dagli Autori non impegnano la responsabilità della Rivista.

## CONTRIBUTI SCIENTIFICI

I lavori dovranno essere redatti utilizzando Microsoft Word per Windows, carattere Times New Roman 12, interlinea 1.5 e margine 2.5 su entrambi i lati. Mediamente il testo (titolo, Autori, affiliazioni e bibliografia esclusi) dovrebbe prevedere una lunghezza compresa tra 6.000 – 15.000 caratteri, spazi esclusi. Tutte le pagine, compresa la bibliografia, dovranno essere numerate progressivamente e portare indicato il nome del primo autore e le prime parole del titolo dell'articolo; analoga indicazione deve figurare sulle tabelle e sulle figure.

## RIASSUNTO

Il riassunto dovrà essere redatto in Inglese e Italiano e strutturato nelle sezioni: Introduzione/Background, Obiettivi/ Objectives, Metodi/Methods, Risultati/Results, Discussioni/Discussion e Conclusioni/Conclusions. In ciascuna lingua il riassunto dovrebbe prevedere una lunghezza mediamente compresa tra 1000 – 2000 caratteri, spazi esclusi.

## PRIMA PAGINA

Nella prima pagina dell'articolo deve essere indicato il titolo, il cognome e l'iniziale del nome dell'autore o degli autori, l'istituzione di appartenenza di ciascun autore, l'indicazione delle eventuali fonti di finanziamento del lavoro e l'indirizzo completo dell'autore responsabile della corrispondenza. Nella stessa pagina dovranno essere indicate almeno 3 parole chiave.

## TABELLE

Le tabelle dovranno essere riportate in pagine separate dal testo e numerate progressivamente con numeri arabi. La didascalia deve contenere le informazioni necessarie ad interpretare la tabella stessa. La tabella, all'interno del testo, deve essere citata per esteso (es.: Table 1 - Tabella 1). Le tabelle devono essere elaborate in word per Windows, in modo che risultino modificabili. Non devono essere salvate come immagini.

## FIGURE

Le figure devono essere numerate in successione con numeri arabi; le didascalie devono essere separate dalle figure. Per fotografie, disegni, grafici: risoluzione almeno 300 dpi, formato JPEG, TIFF.

Nel caso gli autori intendano pubblicare figure o grafici tratti da altre riviste o libri, dovranno previamente ottenere il permesso scritto dall'autore e dalla casa editrice, copia del quale deve essere inviata alla redazione della rivista; nell'articolo gli autori dovranno indicare le fonti da cui il materiale stesso è tratto.

## PRESENTAZIONE DEGLI ARTICOLI

Nella stesura del lavoro si prevede di seguire la seguente suddivisione: Introduzione/Background, Obiettivi/Objectives, Metodi/Methods, Risultati/Results, Discussione/Discussion, Conclusioni/Conclusions, Riassunto/Abstract, Bibliografia.

Per la descrizione di metodi già noti e riportati in letteratura è sufficiente citare gli articoli originali. Nella presentazione dei risultati si deve evitare di ripetere nel testo i dati presentati nelle tabelle e nelle figure.

Presentazione di un contributo scientifico dedicato alla descrizione di casi clinici di particolare interesse e suddiviso nelle sezioni: introduzione, caso clinico o casistica clinica, discussione, conclusioni, bibliografia.

Il testo (titolo, Autori, affiliazioni e bibliografia esclusi) dovrebbe prevedere una lunghezza compresa tra 3.000 – 4.000 caratteri, spazi esclusi.

#### **LETTERA DI ACCOMPAGNAMENTO**

In una lettera di accompagnamento (da inviare anch'essa all'indirizzo di posta elettronica scientifico@simedet.eu), l'autore responsabile della corrispondenza dovrà dichiarare che tutti gli autori hanno letto e condiviso il contenuto e l'interpretazione del lavoro inviato. La lettera d'accompagnamento dovrà riportare anche la dichiarazione firmata dall'autore responsabile sull'esistenza di rapporti finanziari che configurino un potenziale conflitto d'interesse con le materie trattate nel lavoro stesso.

#### **BIBLIOGRAFIA**

La correttezza e la completezza delle citazioni bibliografiche è sotto la responsabilità degli autori. Le citazioni vanno elencate in ordine progressivo numerico.

Nel testo i riferimenti bibliografici dovranno essere indicati con numeri arabi tra parentesi corrispondenti al numero delle citazioni in bibliografia.

Nella citazione bibliografica, se il numero degli autori è più di 4 vanno citati i primi 3 seguiti da et al; se, invece, sono 4 o meno di 4 vanno citati tutti. La numerazione delle pagine non va abbreviata, ma lasciata per esteso. Il nome della rivista deve essere abbreviato secondo le norme dell'Index Medicus.

#### **CONFLITTO DI INTERESSE**

Il conflitto d'interesse sussiste quando il giudizio professionale su un interesse primario, quale l'interpretazione dei propri risultati o di quelli ottenuti da altri, potrebbe essere influenzato, anche in maniera inconsapevole, da un interesse secondario, quale un tornaconto economico o una rivalità personale. Un conflitto d'interesse non è di per sé antietico. Tuttavia, esso deve essere pubblicamente ed apertamente riconosciuto. Tale riconoscimento non avrà alcun valore ai fini della decisione sulla pubblicazione. Pertanto, in conformità con le indicazioni dell'International Committee of Medical Journal Editors (ICMJE) dell'ottobre 2008, all'atto dell'invio di un lavoro per pubblicazione su Italian Journal of Prevention, Diagnostic and Therapeutic Medicine (IJPDTM), nella lettera d'accompagnamento allegata al manoscritto, ciascun autore dovrà dichiarare l'esistenza o meno di legami finanziari (rapporti di consulenza, proprietà di azioni, brevetti o licenze, etc) che possano configurare un potenziale conflitto d'interesse in relazione alle materie trattate nel lavoro stesso. In caso di sussistenza di tali legami finanziari, gli autori interessati dovranno indicarli con una breve ma esauriente definizione. In assenza di conflitto digitare NESSUNO.

#### **BOZZE**

L'autore responsabile del manoscritto il cui contributo sarà accettato per la pubblicazione riceverà le bozze dell'articolo per controllare eventuali errori tipografici. Sulle bozze non potranno essere apportate modifiche sostanziali. La correzione delle bozze solleva la redazione da ogni responsabilità per eventuali errori presenti nel testo.

**La rivista è sotto la tutela delle leggi internazionali sulla proprietà letteraria.**

#### **NORME PER GLI AUTORI**

##### **RESPONSABILITÀ DEGLI AUTORI**

La responsabilità delle affermazioni contenute negli articoli è dei singoli autori.

##### **PER LE IMMAGINI**

In merito ai diritti di riproduzione la SIMEDET si dichiara disponibile per regolare eventuali spettanze relative alle immagini delle quali non è stato possibile reperire la fonte.

##### **LEGGE SULLA PRIVACY**

Nomi e indirizzi e-mail inseriti in questo sito saranno trattati esclusivamente per gli scopi dichiarati di questa rivista e non verranno utilizzati per altre finalità.



# IJPDTM

Instructions to authors

*The Italian Journal of Prevention, Diagnostic and Therapeutic Medicine (IJPDTM)* is a scientific journal that publishes original articles, reviews, notes, editorials and letters focusing on prevention, diagnosis, cure and research in the medical field. IJPDTM journal is designed for health professionals.

Submission of an article implies that the work described has not been published previously and is not currently under consideration for publication elsewhere. To ensure a larger distribution all articles are in Italian and, preferably, English. The abstract must be in both languages.

All manuscripts must be submitted via e-mail to [scientifico@simedet.eu](mailto:scientifico@simedet.eu) and a committee of scientific reviewers will assess the contributions for suitability with corrections where required.

Authors will be informed on the opinion of the reviewers. IJPDTM Journal does not reflect authors' opinions.

## SCIENTIFIC CONTRIBUTIONS

Articles must be submitted in Microsoft Word for Windows, Times New Roman font 12-point type, paragraph spacing 1.5 and margin 2.5 on both sides.

Articles are expected to be between 6,000 and 15,000 characters –without spaces– not including title, authors' names, affiliations and bibliography. All pages must be progressively numbered and show the name of the first author and the first words of the title of the article; same procedure must be applied to tables and pictures.

### ABSTRACT

Abstract, in English and Italian, must be arranged as follows: Introduzione/Background, Obiettivi/Objectives, Metodi/Methods, Risultati/Results, Discussioni/Discussions, and Conclusioni/Conclusions. Total length of the abstract for each language should be between 1,000 and 2,000 characters, without spaces.

### FIRST PAGE

The first page of the article must report the title, surname and name initials of the author(s), the institute (each author is affiliated to, details of the sponsor(s), if any, who provided financial support for the research, and full address of the author(s). In the same page at least three key words in Italian and English must be included.

### TABLES

Tables should be separate from the text and progressively numbered in Arabic numerals; explanatory notes must accompany each table with all necessary information. Tables in the text must be labeled without abbreviations (e.g.: Table 1 – Tabella 1) and must be saved in Word for Windows format to allow for editing where necessary. Tables cannot be saved as images.

### PICTURES

Pictures must be progressively numbered in Arabic numerals; legends must be separate from pictures. Photographs, sketches and graphs must have a resolution of at least 300 dpi, format JPEG, TIFF.

### PRESENTATION OF THE ARTICLES

Articles must be arranged with the following headings: Introduzione/Background, Obiettivi/Objectives, Metodi/Methods, Risultati/Results, Discussioni/Discussions, Conclusioni/Conclusions, Riassunto/Abstract, Bibliografia/Bibliography.

When describing well-known methods it will suffice to name the original sources. When reporting results, data already included in tables and pictures should be omitted.

Scientific contributions describing clinical cases of particular interest shall be divided in the following sections: Introduzione/Background, Caso (casistica) clinico/Clinical case, Discussioni/Discussions, Conclusioni/Conclusions, Riassunto/Abstract, Bibliografia/Bibliography.

Texts must have a length of 3,000 to 4,000 characters without spaces, not inclusive of title, authors, affiliations and bibliography.

### COVER PAGE

A cover page should be sent via e-mail to [scientifico@simedet.eu](mailto:scientifico@simedet.eu). In this letter the author responsible for the submission of a manuscript declares that all coauthors have read and agreed on the content and version of the submitted manuscript. A signed declaration of the author responsible will also be included in the letter, reporting existing financial interests that may be in conflict with the content of the manuscript.

## REFERENCES

Authors will be the sole responsible for the corrected and complete list of citations in the submitted manuscripts. Citations must be in progressive numerical order. Bibliographical references in the manuscript must be numbered by Arabic numerals -in parentheses- in the order in which the corresponding citation appears.

When the number of authors in a citation exceeds four, the first three will be reported, followed by et al; in case the number equals or is less than four, all names must be cited. Page numbering cannot be abbreviated. The name of the journal must be abbreviated according to the Index Medicus guidelines.

## DECLARATION OF INTEREST

A conflict of interest arises whenever the professional opinion on the interpretation of a research could be biased, albeit unconsciously, by secondary interests such as financial or personal reasons. A declaration of interest must be publicly disclosed and it will not determine or influence the final decision on the publication of the work. In accordance with the guidelines of the International Committee of Medical Journal Editors (ICMJE) (October 2008), authors of manuscripts submitted for publication to the Italian Journal of Prevention, Diagnostic and Therapeutic Medicine (IJPDTM) are required to disclose any competing interests in the cover page (including employment, consultancies, stock ownership, patent registrations, grants etc.) that might affect the interpretation of the content of the author's work. If there are no interests to declare, then please state 'Declaration of interest: none'.

## PRESENTATION OF THE ARTICLES

The author responsible for a contribution that has been accepted for publication will receive proofs of the manuscript to check for possible corrections. Substantial changes on the proofs are not permitted. Proofreading is solely the author's duty and will release the Editor from any responsibility.

## RULES FOR AUTHORS

### RESPONSIBILITY OF THE AUTHORS

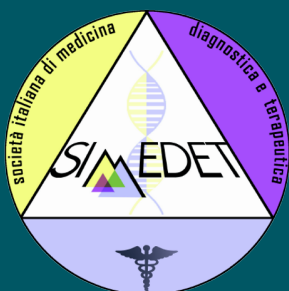
The responsibility of the statements contained in the articles lies with the individual authors.

### FOR IMAGES

With regard to reproduction rights, SIMEDET declares itself available to regulate any charges relating to the images of which it was not possible to find the source.

### PRIVACY

Names and addresses that appear on this site will be treated exclusively for the purposes indicated in this journal and will not be utilized for any other intention.



Rivista Ufficiale della Società Italiana  
di Medicina Diagnostica e Terapeutica  
(SIMEDET)

**Sede legale:** Via dei Baldassini, 14 Roma 00163

**Recapito telefonico:** 3382843188

**Web site:** [www.simedet.eu](http://www.simedet.eu) / [www.ijpdtm.it](http://www.ijpdtm.it)

**E-mail:** [info@simedet.eu](mailto:info@simedet.eu)

[presidente@simedet.eu](mailto:presidente@simedet.eu)

[scientifico@simedet.eu](mailto:scientifico@simedet.eu)

[social@simedet.eu](mailto:social@simedet.eu)

[ufficiostampa@simedet.eu](mailto:ufficiostampa@simedet.eu)