



Reggio Emilia, Tecnopolo

16-17 gennaio 2026



GITMO 1000 miglia

**Presente e futuro del ruolo
degli infermieri nelle
terapie cellulari**

**Le survivorship care nel trapianto:
esperienze e proposte di ricerca
dell'AUSL-IRCCS di Reggio Emilia**

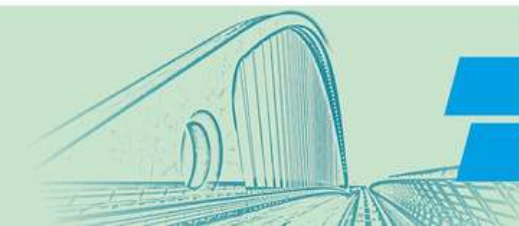
Margherita Schiavi

**Terapista Occupazionale
Ricercatrice Sanitaria**

AUSL–IRCCS di Reggio Emilia
Unità di Ricerca & Evidence Based Practice

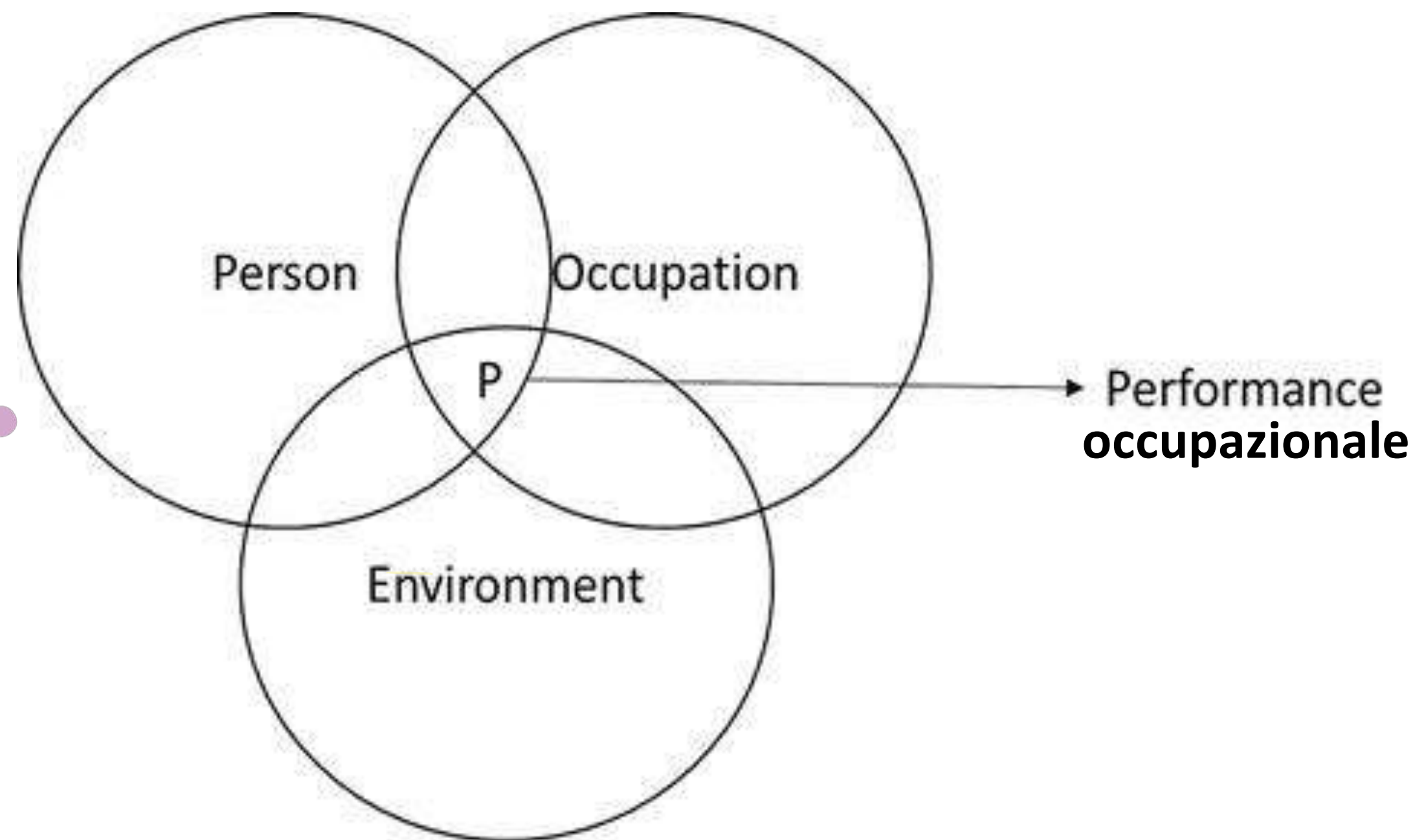
PhD Candidate

Clinical and Experimental Medicine
Università degli Studi di Modena e Reggio Emilia

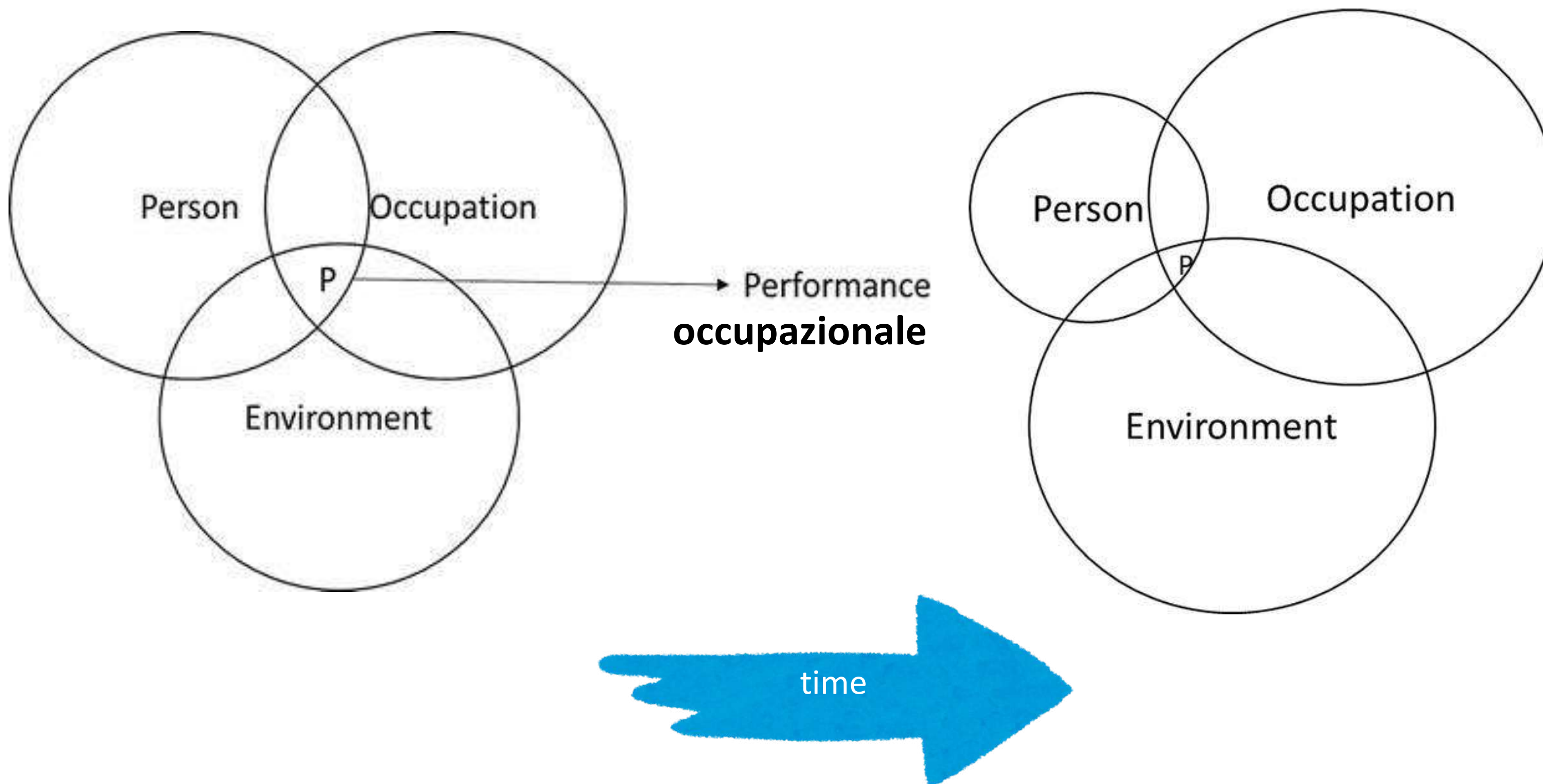


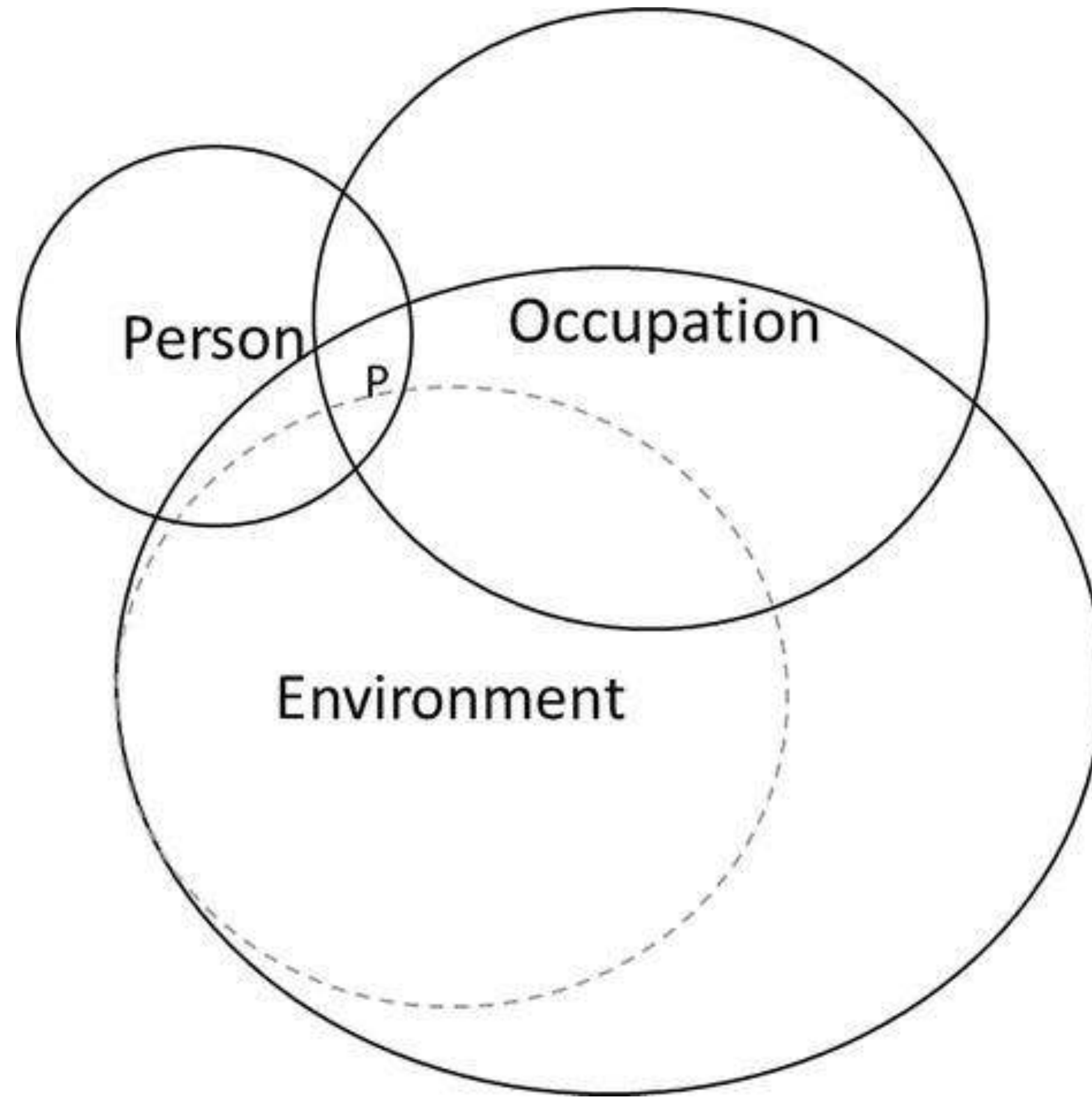
Terapia Occupazionale? Terapista Occupazionale?

Person-Environment-Occupation
Model
PEO



Schiavi, M., Volta, B., Sandri, G., Keeling, E., & Teresa Mascia, M. (2022). Early Occupational Therapy Intervention: Patients' Occupational Needs. IntechOpen. <https://doi.org/10.5772/intechopen.102356>





Che cosa è importante per te?

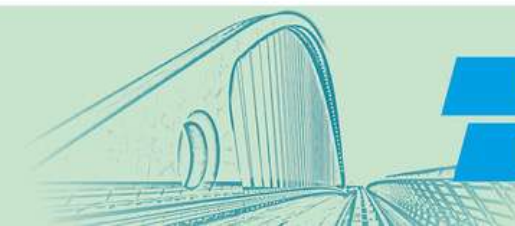
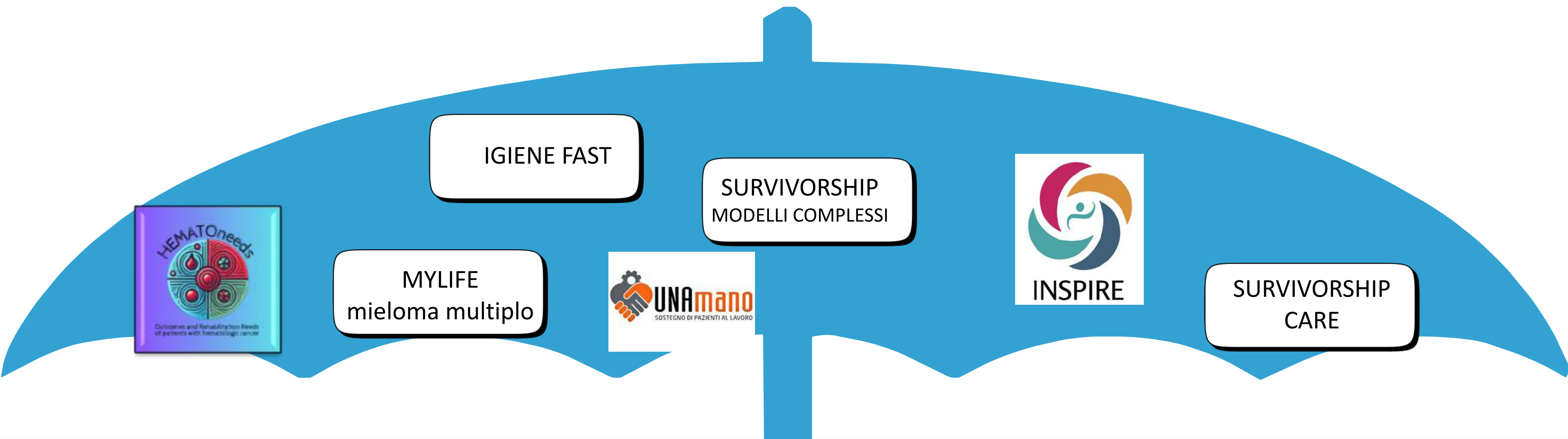
Cosa vorresti fare che non stai facendo o che non sei soddisfatto di come lo fai?

Che cosa gli altri si aspettano che tu faccia?

BISOGNI



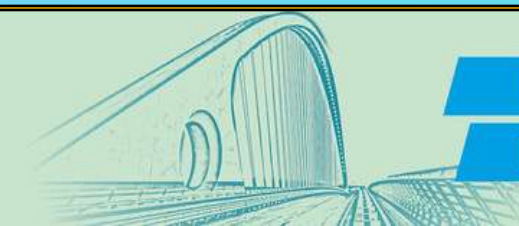
Raccolta e risposta dei bisogni delle persone con patologia oncologica
in diverse fasi del percorso → Favorire autonomia, qualità di vita



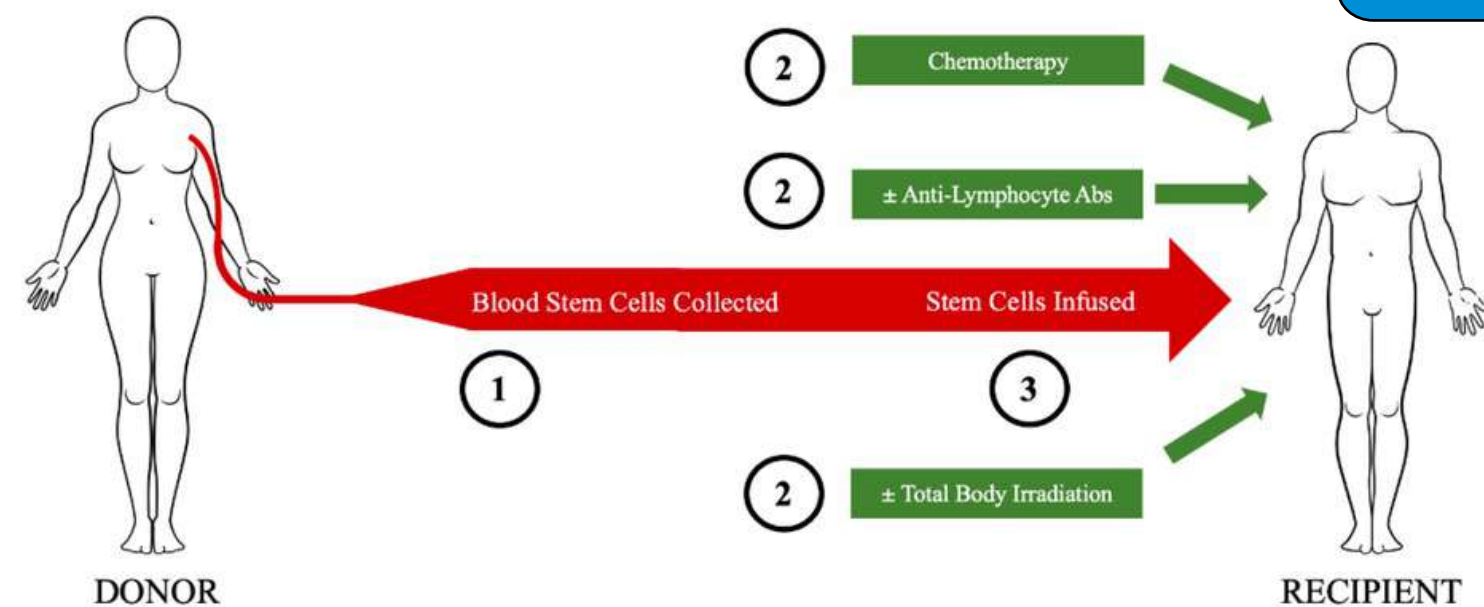


HEMATOneeds

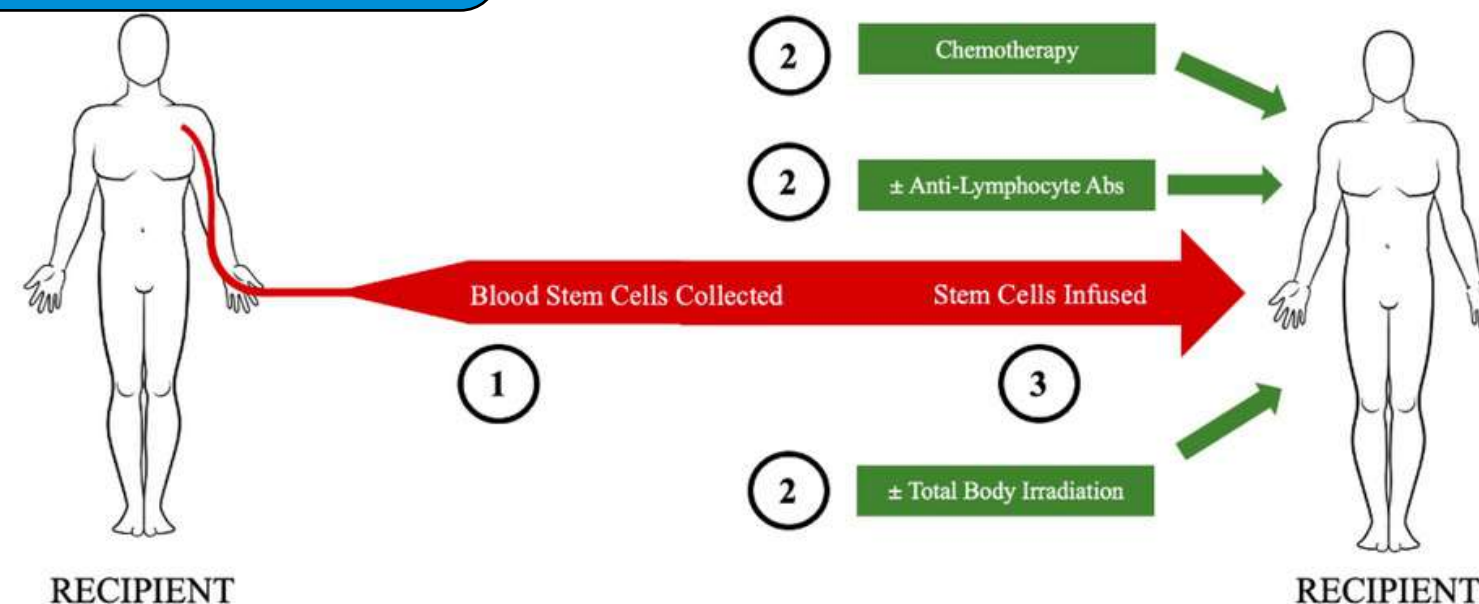
**Outcomes and Rehabilitation Needs
in Patients with Hematologic Cancer Undergoing Hematopoietic Stem Cell
Transplantation
or CAR T-Cell Therapy:
A Prospective Observational Study**



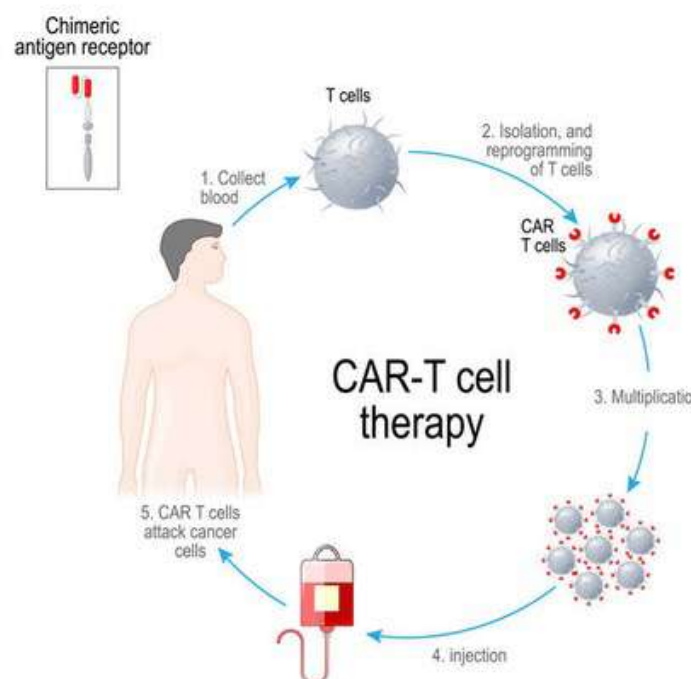
A



Trapianto allogenico



Trapianto autologo



Car T

Levin, D., Osman, M. S., Durand, C., Kim, H., Hemmati, I., Jamani, K., Howlett, J. G., Johansson, K. A., Weatherald, J., Woo, M., Lee, J., & Storek, J. (2022). Hematopoietic Cell Transplantation for Systemic Sclerosis-A Review. Cells, 11(23), 3912. <https://doi.org/10.3390/cells11233912>

Treatment

Transplantation and Car-T cell therapy
positively impact the survival
of patients with hematologic cancer



Treatment challenges

Toxicities and adverse effects impact



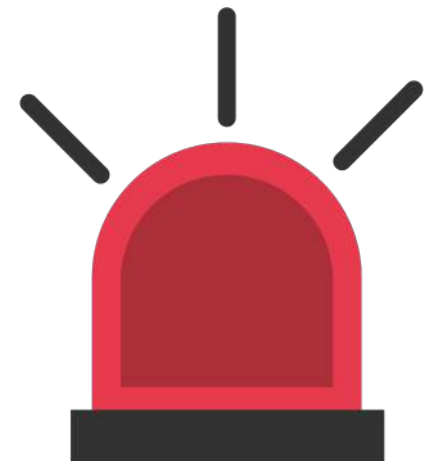
Physical function



Muscle strength



QoL



Fatigue

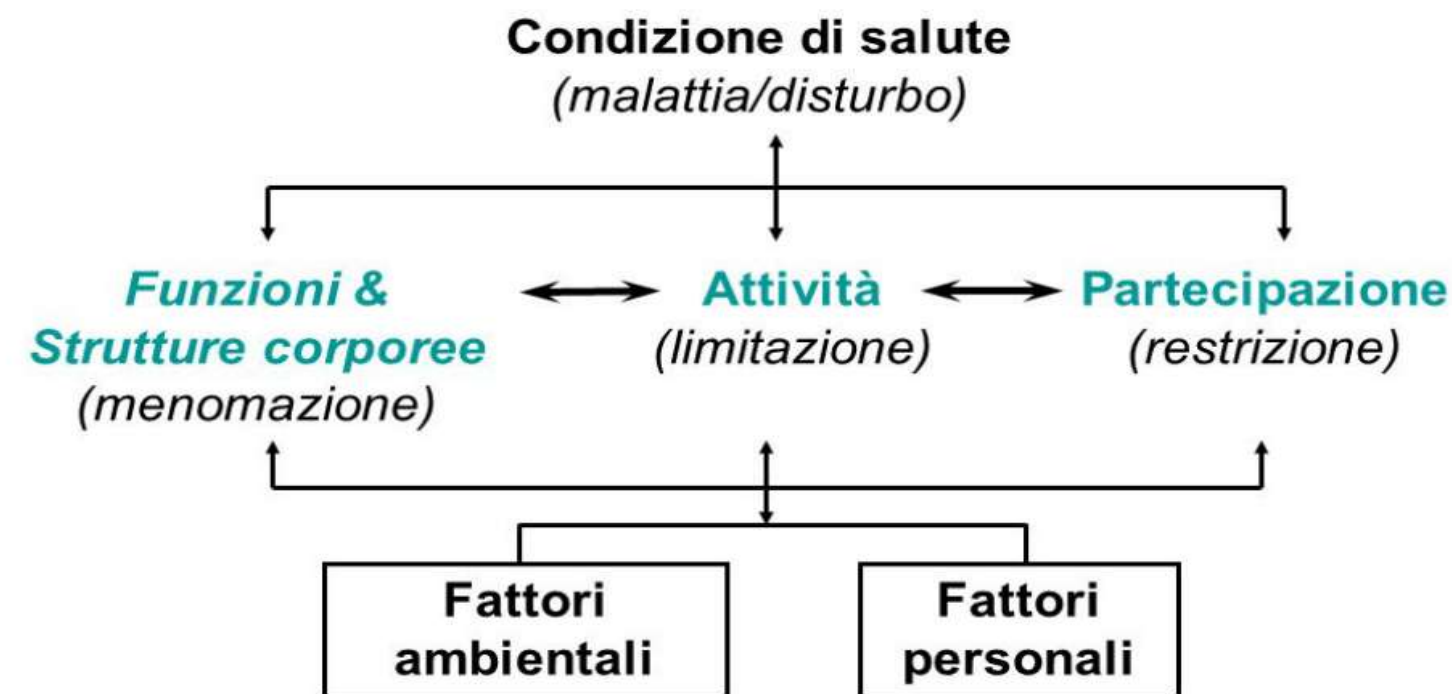


Frequent **infections,**
complications (1,2)



Impact on QoL

Both treatments also contribute to **loss of mobility** that affect **autonomy** and **participation** into daily life activities



Therapeutic goal

Mitigating adverse effects, improving overall well-being and QoL





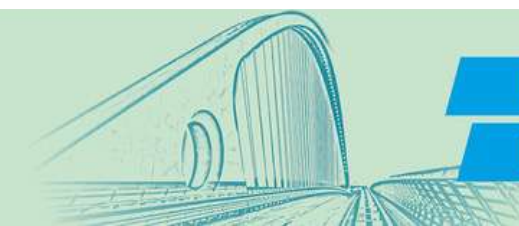
Physical activity is a key factor in **improving quality of life**, both physical and psychological well-being (4)



Patients who undergo a **pre-surgery fitness program** have **reduced hospital stays and medical costs** (5)



Patients with **higher fitness levels** have **reduced postoperative complications and better surgical outcomes**(6)



A Prospective Observational Study Objectives

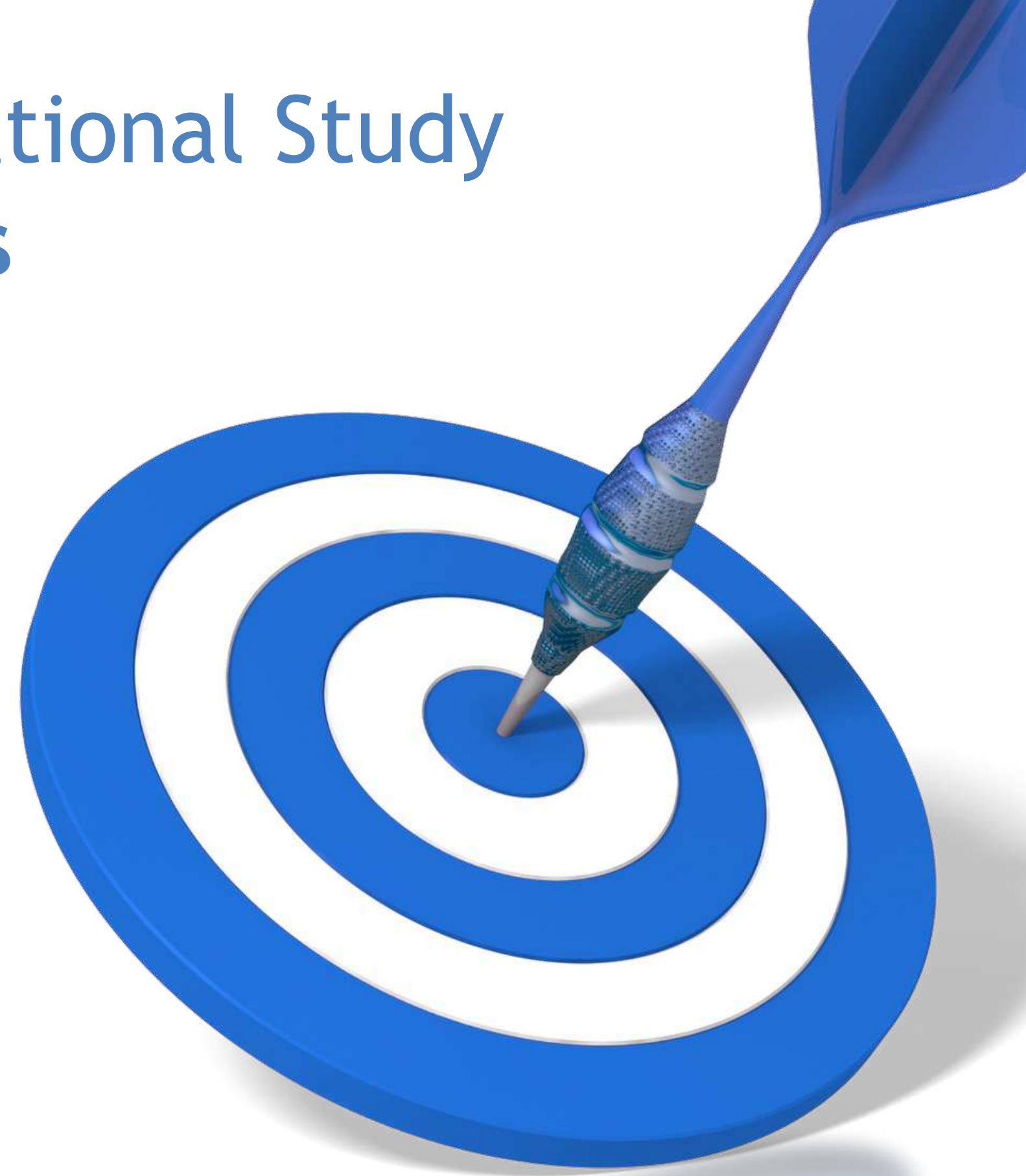
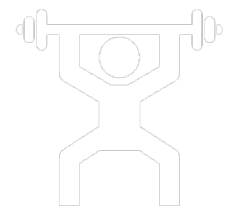
1. To assess

- physical function
- quality of life
- fatigue

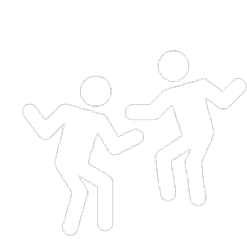
To describe

- complications
- rehabilitation needs

2. To evaluate the optimal timing and approach for offering rehabilitative treatment



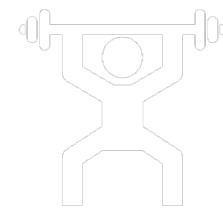
Inclusion criteria



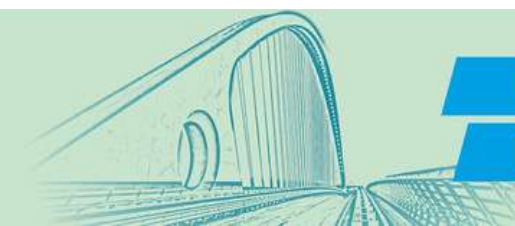
- Patients with hematologic cancer scheduled to undergo HSCT or CAR T-cell therapy
- Age ≥ 18 years
- Able to provide informed consent to participate in the study
- Able to understand and participate in the study
- Able to understand and communicate in the Italian language

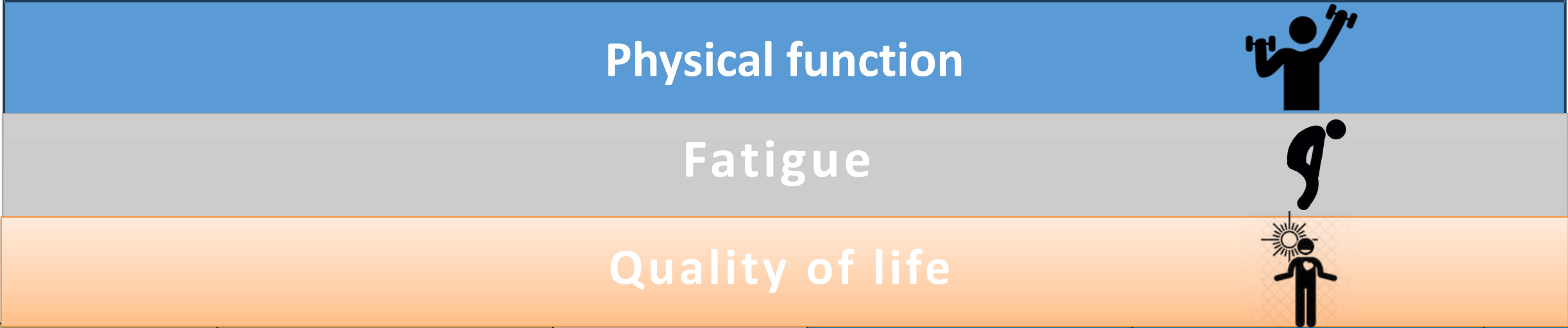


Exclusion criteria



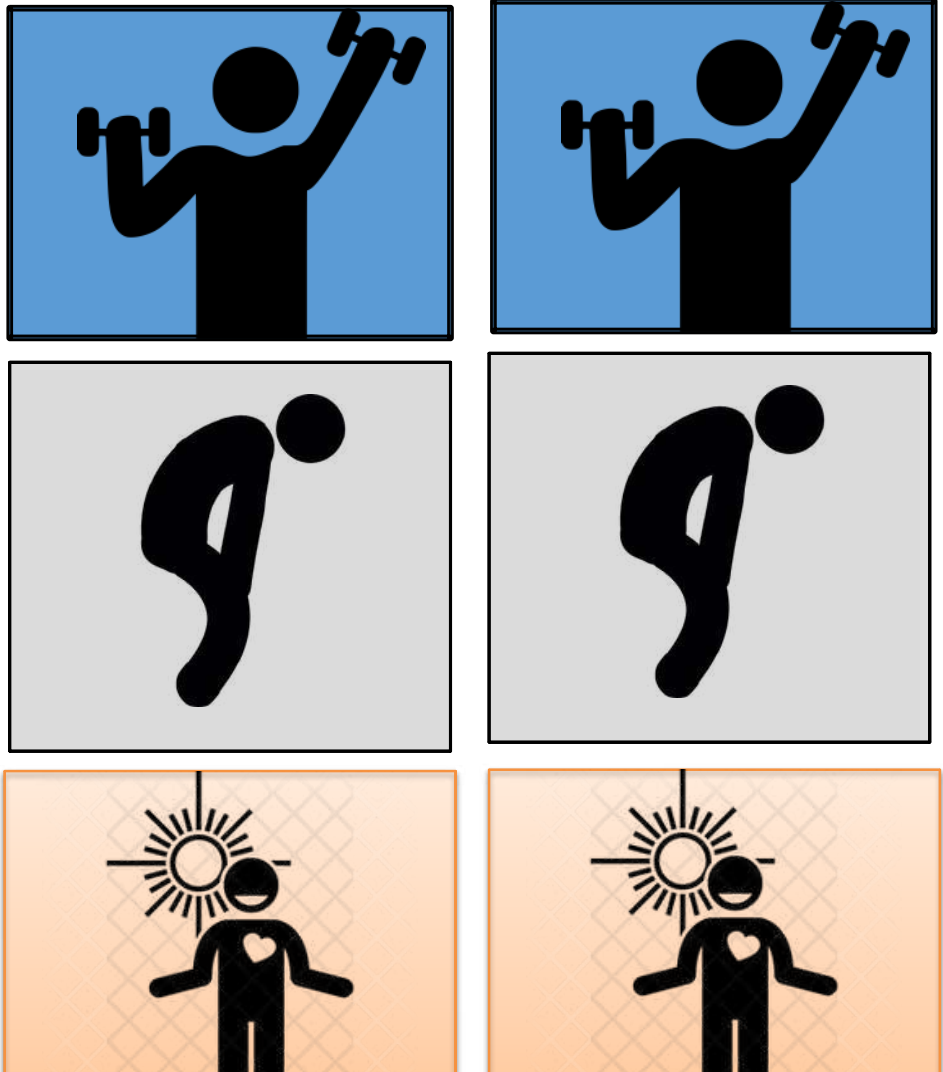
Patients who are unable to perform physical tests or have contraindications to movement



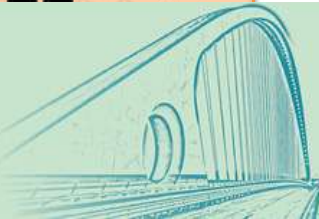
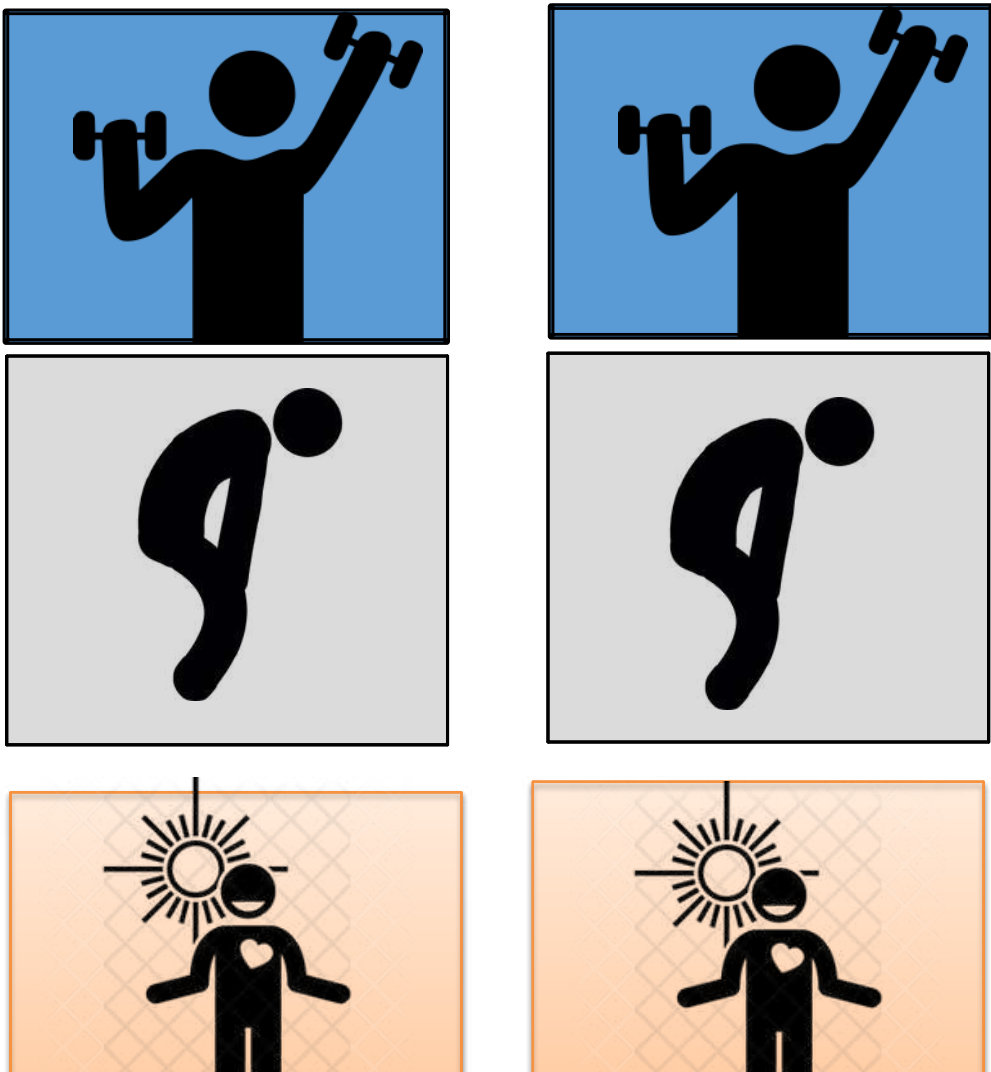


Time point	T0 -2 months	T1 -7-14 days	Treatment	T2 +1 month	T3 +3 months	T4 +6 months
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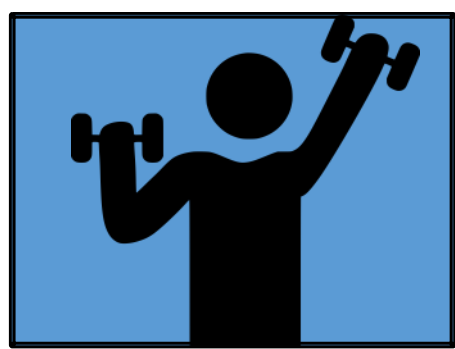
Design



- Complications
- Any hospitalizations
- Length of stay

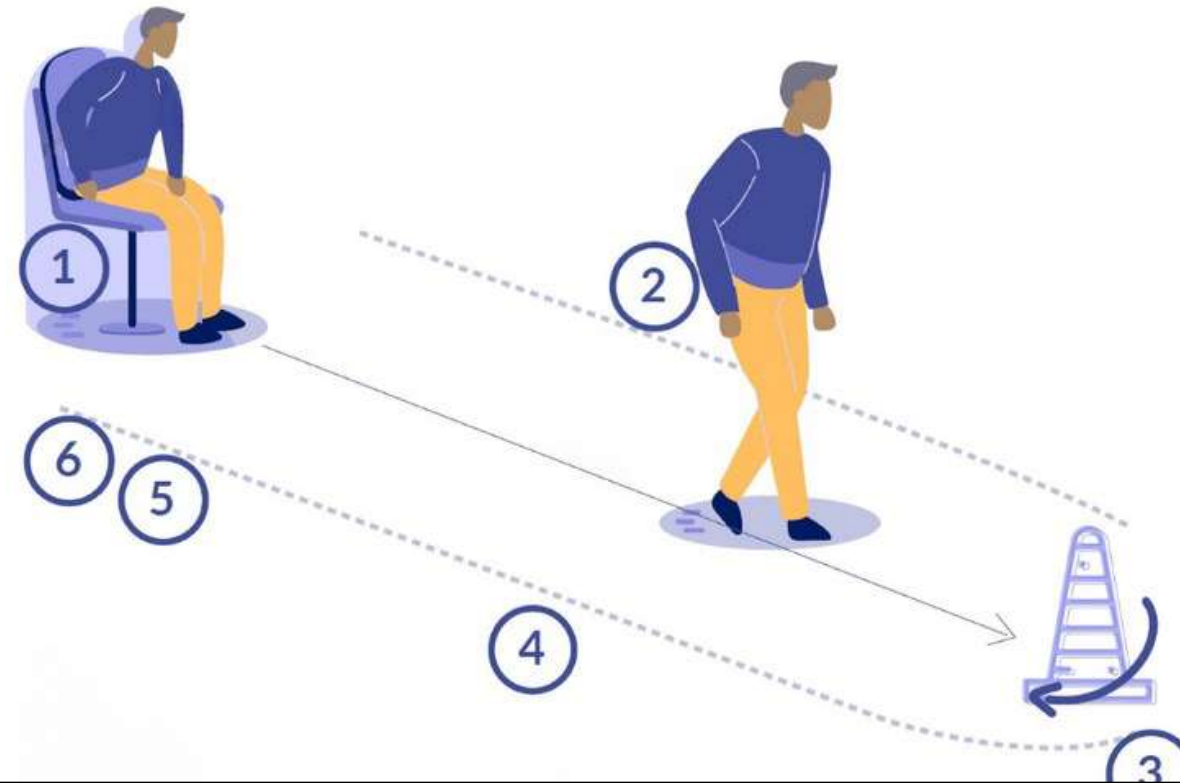


Time Up and Go (TUG)

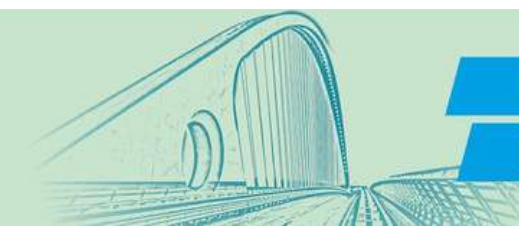
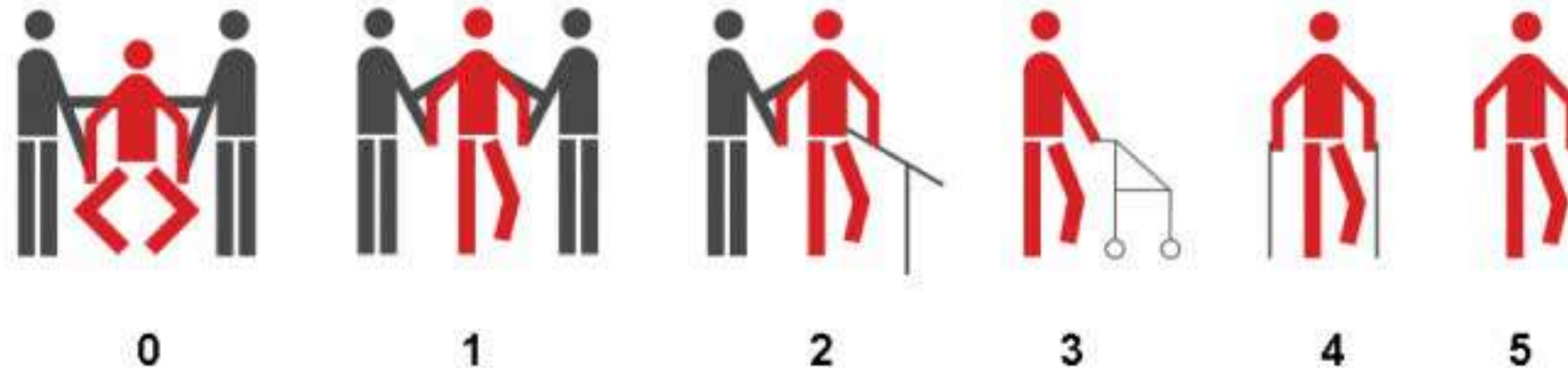


Tempo superiore a 12 secondi
→ Deficit nella mobilità e rischio caduta

Tempo superiore a 20 secondi
→ Severa limitazione nella mobilità e alto grado di dipendenza



Description of Functional Ambulation Category (FAC)



FUNZIONALITÀ FISICA

cut-off

≤9 punti

bassa performance fisica

mobility limitation,

frailty risk

Short Physical Performance Battery (SPPB)

Short Physical Performance Battery

Balance test

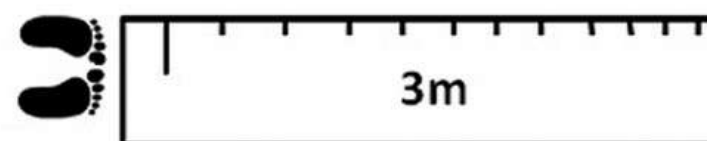


(a)

(b)

(c)

Gait speed test



(d)

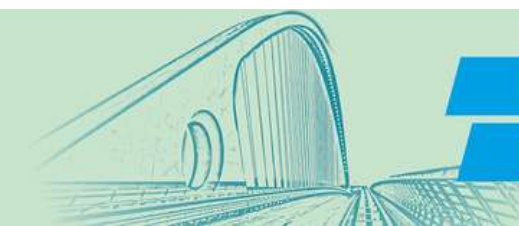
Five chair stand test



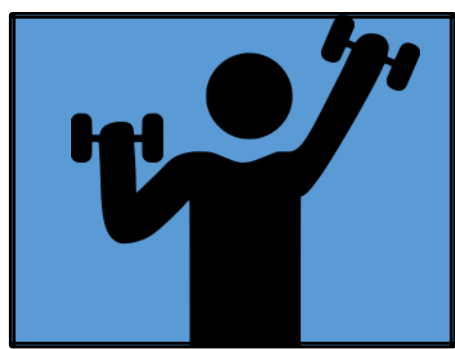
5x

(e)

Handgrip Strength Test



Tampa Scale of Kinesiofobia

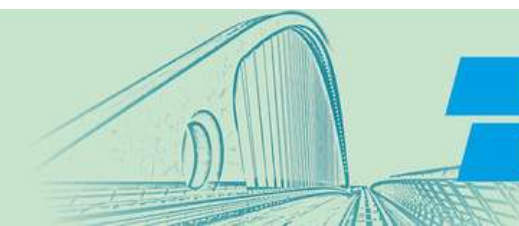


no kinesiophobia

severe kinesiophobia

Activity avoidance

Somatic Focus



Duke Activities Score Index (DASI)

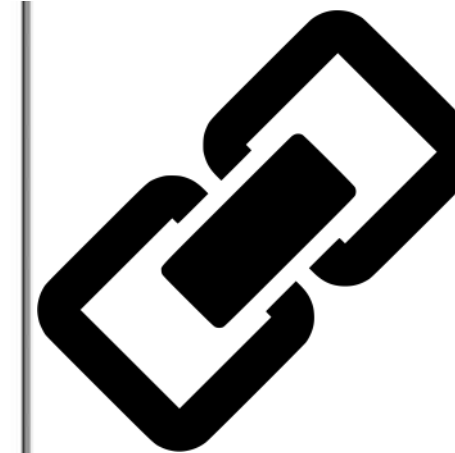
self-perceived functional ability in activities of daily living



0=no functional ability

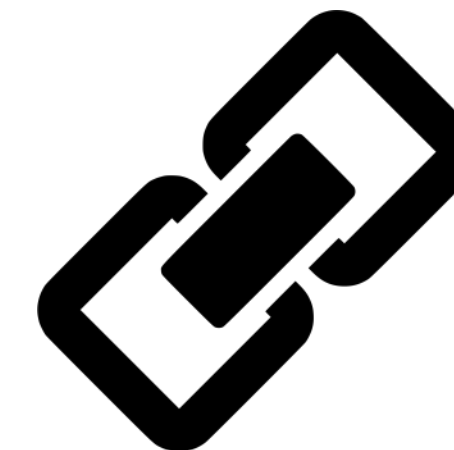
ADL/IADL

58,2= max functional ability



Metabolic
Equivalent
of Tasks
(METs)

International Physical Activity Questionnaire – Short Form (IPAQ-SF)



Metabolic
Equivalent
of Tasks
(METs)

Below is a list of statements that other people with your illness have said are important. Please circle or mark one number per line to indicate your response as it applies to the past 7 days.

		Not at all	A little bit	Some- what	Quite a bit	Very much
III7	I feel fatigued	0	1	2	3	4
III12	I feel weak all over	0	1	2	3	4
An1	I feel listless (“washed out”)	0	1	2	3	4
An2	I feel tired.....	0	1	2	3	4
An3	I have trouble <u>starting</u> things because I am tired.....	0	1	2	3	4
An4	I have trouble <u>finishing</u> things because I am tired	0	1	2	3	4
An5	I have energy	0	1	2	3	4
An7	I am able to do my usual activities.....	0	1	2	3	4
An8	I need to sleep during the day	0	1	2	3	4
An12	I am too tired to eat.....	0	1	2	3	4
An14	I need help doing my usual activities	0	1	2	3	4
An15	I am frustrated by being too tired to do the things I want to do	0	1	2	3	4
An16	I have to limit my social activity because I am tired.....	0	1	2	3	4

Range
0 to 52

Higher Score = Better

A higher score indicates
less fatigue and better
quality of life.

European Organization for Research and Treatment of Cancer QoL Questionnaire-C30 (EORTC-QLQ C30)



Global scale

Functional scales

- Physical
- Role
- Emotional
- Cognitive
- Social

Symptom scales

- Fatigue
- Pain
- Nausea

6 single item scales

- Dyspnea
- Insomnia
- Appetite
- Constipation
- Diarrhea
- Financial difficulties

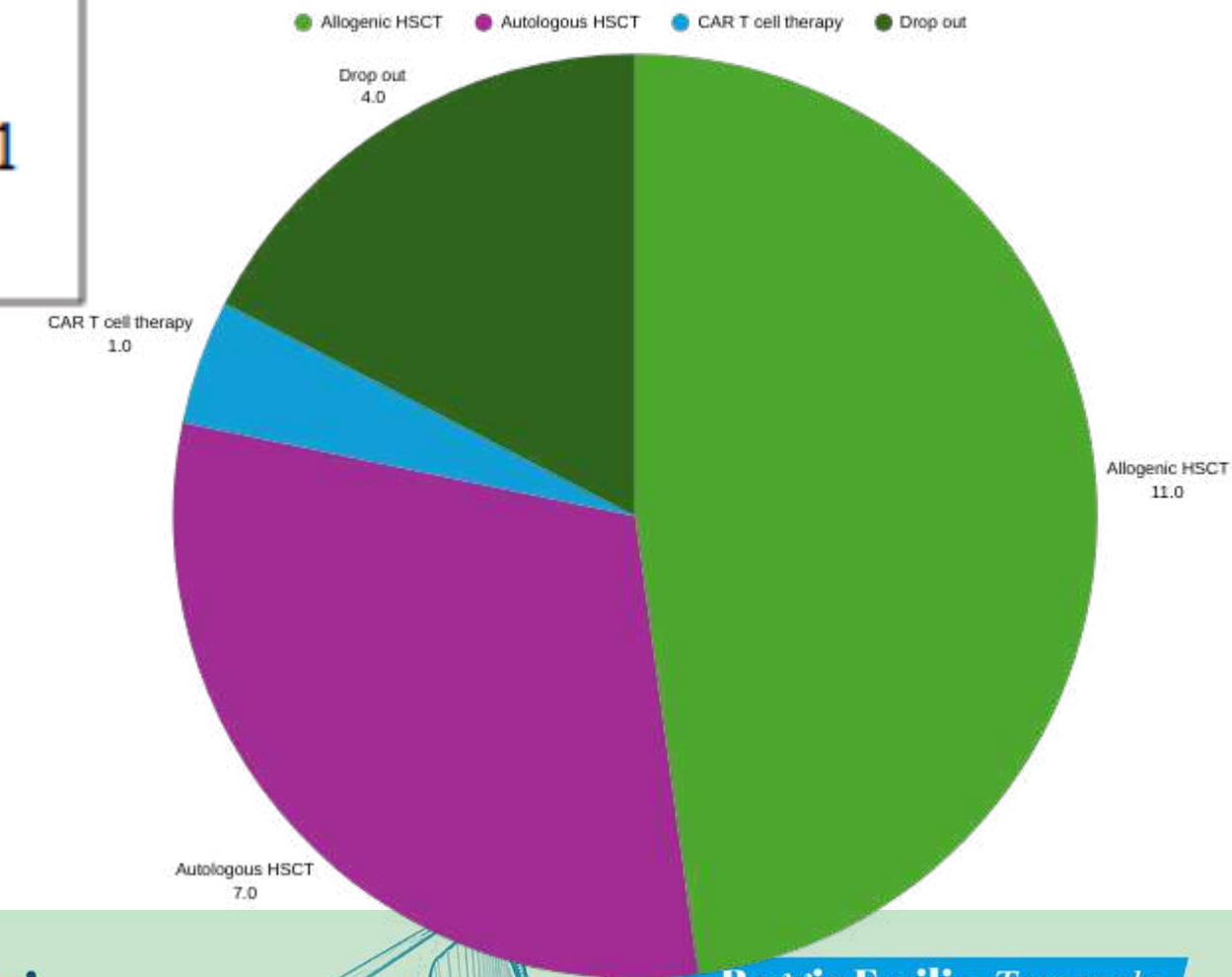
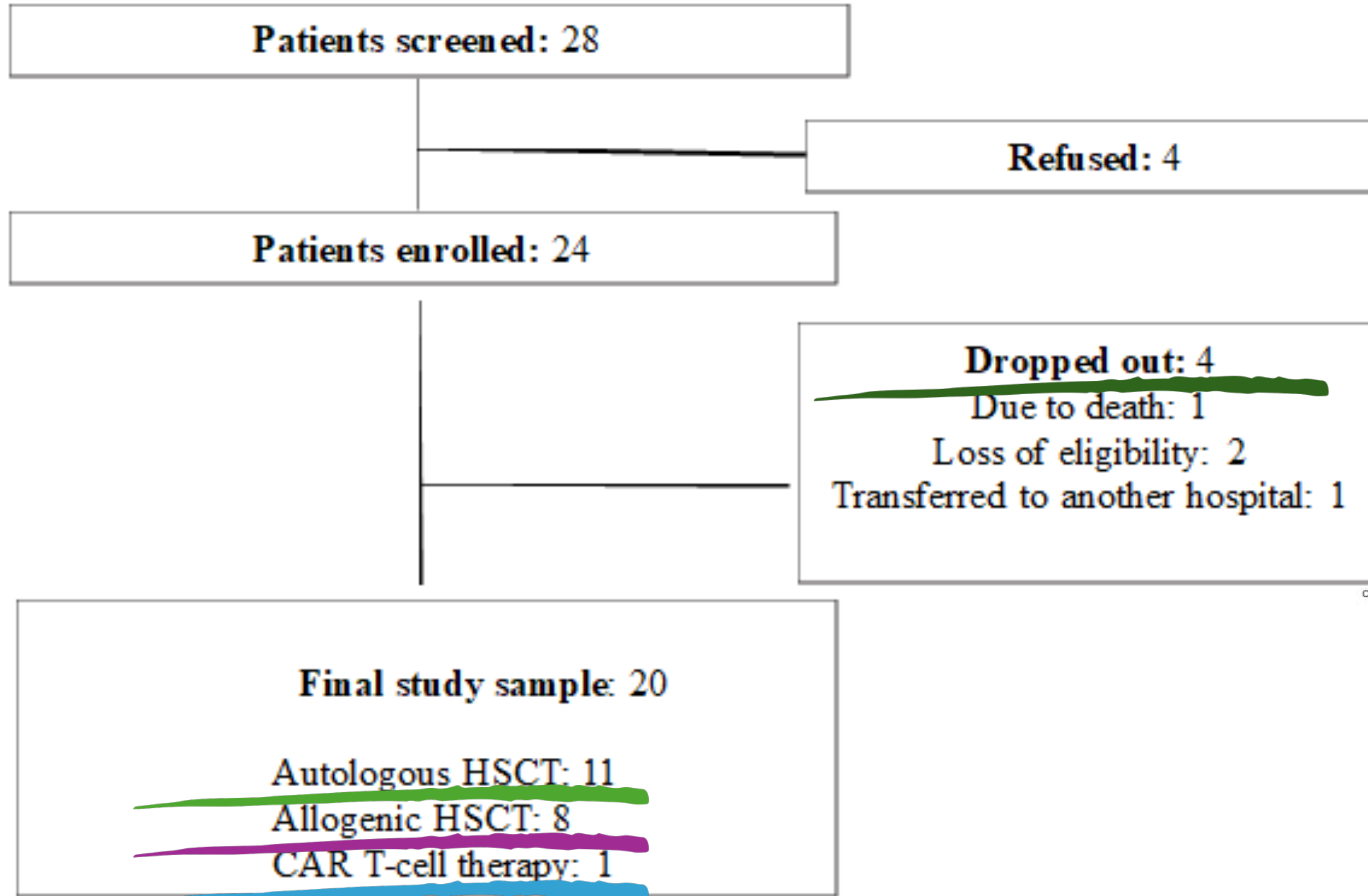
Data collection

Observational prospective study

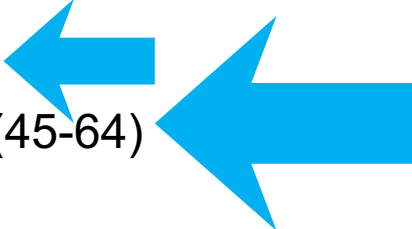
Time point	T0 - 2 mts	T1 -7/14 dys	Time point	T2 + 1 mts	T3 + 3 mts	T4 + 6 mts
	<u>Physical function:</u> • TUG • HST • SPPB <u>QoL and needs:</u> • EORTC-QLQ-C30 • FACIT-Fatigue • FAC • Tampa scale • DASI • IPAQ-SF	<u>Physical function:</u> • TUG • HST • SPPB <u>QoL and needs:</u> • EORTC-QLQ-C30 • FACIT-Fatigue • FAC • Tampa scale • DASI • IPAQ-SF	Treatment	• Complications • Any further hospitalization • Length of hospital stay	<u>Physical function:</u> • TUG • HST • SPPB <u>QoL and needs:</u> • EORTC-QLQ-C30 • FACIT-Fatigue • FAC • Tampa scale • DASI • IPAQ-SF	<u>Physical function:</u> • TUG • HST • SPPB <u>QoL and needs:</u> • EORTC-QLQ-C30 • FACIT-Fatigue • FAC • Tampa scale • DASI • IPAQ-SF



Results



Results

Sociodemographic factors		Total N (%) 20 (100.0)	
Gender	Female Male	9 (45.0) 11 (55.0)	 
Age category	Aged (≥ 65) Middle-aged (45-64) Adult (19-44)	6 (30.0) 10 (50.0) 4 (20.0)	
Education level ^a	Low Medium High	6 (30.0) 12 (60.0) 2 (10.0)	
Caregiver	Yes No	19 (95.0) 1 (5.0)	
Employment status	Retired On sick leave Non-worker Worker	8 (40.0) 6 (30.0) 2 (10.0) 4 (20.0)	

a. Low education level = primary school and middle school; medium education level = high school, high education level = university or post-university degree.

Results

Clical characteristics		Total N (%) 20 (100.0)
BMI category ^b	Normal weight Overweight Obese 	13 (65.0) 5 (25.0) 2 (10.0)
Smoking category	Not a smoker Smoker 	17 (85.0) 3 (15.0)
Diagnosis	Myelodysplastic syndromes (MDS) Acute Myeloid Leukemia, (AML) Acute Lymphoblastic Leukemia (ALL) Non-Hodgkins Lymphoma Hodgkin's Lymphoma Multiple myeloma/plasma cell disorders	5 (25.0) 1 (5.0) 1 (5.0) 5 (25.0) 2 (10.0) 6 (30.0)
Scheduled treatment	Autologous transplant Allogeneic transplant Car-t cell therapy	11 (55.0) 8 (40.0) 1 (5.0)
b. BMI category = BMI < 25 normal weight; BMI ≥ 25 overweight; BMI ≥ 30 obese.		

Time point	T0 - 2 mts	T1 -7/14 dys		T2 + 1 mts	T3 + 3 mts	T4 + 6 mts
	<u>Physical function:</u> • TUG • HST • SPPB <u>QoL and needs:</u> • EORTC-QLQ-C30 • FACIT-Fatigue • FAC • Tampa scale • DASI • IPAQ-SF	<u>Physical function:</u> • TUG • HST • SPPB <u>QoL and needs:</u> • EORTC-QLQ-C30 • FACIT-Fatigue • FAC • Tampa scale • DASI • IPAQ-SF	Treatment	• Complications • Any further hospitalization • Length of hospital stay	<u>Physical function:</u> • TUG • HST • SPPB <u>QoL and needs:</u> • EORTC-QLQ-C30 • FACIT-Fatigue • FAC • Tampa scale • DASI • IPAQ-SF	<u>Physical function:</u> • TUG • HST • SPPB <u>QoL and needs:</u> • EORTC-QLQ-C30 • FACIT-Fatigue • FAC • Tampa scale • DASI • IPAQ-SF



Outcomes	Baseline (Mean ± SD)	T1 (Mean ± SD)	IC 95% (Baseline/T1)	Cut-off for low performance	Interpretation
Physical functional capacity (TUG)	15.2 ± 13.9	14.6 ± 5.1	3.6-26.8/12.6-17.1	≥ 12 s ≥ 20.0 s.	•Mobility impairment and high fall risk •Severe mobility limitation or high dependency
Physical functional capacity (SPPB)	8.7 ± 2.2	7.9 ± 2.5	6.9-10.6/6.8-9.4	≤ 9 ≤ 6	•Low physical performance (mobility limitation, frailty risk) •Severe mobility limitation
(R) Upper limb muscle strength	17.8 ± 1.5 (F) 39.3 ± 3.1 (M)	19.4 ± 3.5 (F) 33.8 ± 5.1 (M)	15.4-20.2/16.7-22.1 34.4-44.2/30.4-37.2	< 16 Kg (woman); < 27Kg (men)	•Low muscle strength → probable sarcopenia
(L) Upper limb muscle strength	17.0 ± 3.0 (F) 34.5 ± 0.8 (M)	17.8 ± 4.3 (F) 33.8 ± 3.3 (M)	12.2-21.8/14.5-21.1 33.2-35.8/31.6-36.0		•Clinically significant fatigue. Lower scores = higher fatigue
FACIT-Fatigue	36.5 ± 6.6	40.8 ± 7.7	31.0-42.0/37.2-44.4	≤ 43 general population; ≤ 34 (oncological population)	•Low physical activity
IPAQ-SF*	90% Low (7/8)	70% Low (14/20)	< 600 MET-min/week		
Tampa Scale of Kinesiophobia (TSKT)	25.4 ± 7.8	21.7 ± 5.2	18.8-31.9/19.3-24.2	≥ 37	•High Kinesiophobia. Higher scores = greater fear of movement; associated with avoidance behavior
Duke Activities Score Index (DASI)	23.7 ± 17.6	28.8 ± 14.7	9.0-38.4/21.9-35.7	≤ 24.1	•Low functional capacity (total range score 0-58.2)

*Category: Low: does not meet criteria for moderate or high; moderate: 3 or more days of vigorous activity of at least 20 min/day or 5 or more days of moderate activity or walking of at

Conclusions

- **Low physical function** two months before transplantation/Car-t (TUG;SPPB)
- Presence of **fatigue**
- **Low level of physical activity**



Rehabilitation needs

Early rehabilitation as a supportive care interventions to:

- **Improve QoL, fatigue, muscle strength, and physical function**
- **Prevent side effects, complications** and cost associated to treatment and post-treatment care as a shown **before** surgery in a variety of cancer

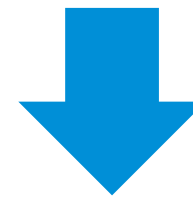


Early rehabilitation as a supportive care interventions to:

- Improve QoL, fatigue, muscle strength, and **physical function**
- Prevent side effects, complications and cost associated to treatment and post-treatment care as a shown **before** surgery in a variety of cancer



Proposals for the Future



PREhabilitation

Time point	T0 - 2 mts	T1 -7/14 dys	Treatment
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WAIT



Time point	T2 + 1 mts	T3 + 3 mts	T4 + 6 mts
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Proposals for the Future

BISOGNI RIABILITATIVI

«Cosa posso fare? Dove lo posso fare?»

- RETE COL TERRITORIO
 - Telemedicina
- Educazione terapeutica
 - Stile di vita

**“The best way to predict the
future
is to prepare for it”**

Peter Drucker



References

1. Hung, Y. C., Bauer, J., Horsley, P., Waterhouse, M., Bashford, J., & Isenring, E. (2013). Changes in nutritional status, body composition, quality of life, and physical activity levels of cancer patients undergoing autologous peripheral blood stem cell transplantation. *Supportive care in cancer : official journal of the Multinational Association of Supportive Care in Cancer*, 21(6), 1579–1586. <https://doi.org/10.1007/s00520-012-1698-y>
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4. Marquez, D. X., Aguiñaga, S., Vásquez, P. M., Conroy, D. E., Erickson, K. I., Hillman, C., Stillman, C. M., Ballard, R. M., Sheppard, B. B., Petruzzello, S. J., King, A. C., & Powell, K. E. (2020). A systematic review of physical activity and quality of life and well-being. *Translational behavioral medicine*, 10(5), 1098–1109. <https://doi.org/10.1093/tbm/ibz198>
5. Pre-surgery fitness programme reduces patients' stay in hospital. (2017). *Nursing standard (Royal College of Nursing (Great Britain) : 1987)*, 31(37), 16. <https://doi.org/10.7748/ns.31.37.16.s17>
6. Myers, J. N., & Fonda, H. (2016). The Impact of Fitness on Surgical Outcomes: The Case for Prehabilitation. *Current sports medicine reports*, 15(4), 282–289. <https://doi.org/10.1249/JSR.0000000000000274>