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Ethical Issues in Rehabilitation of Persons after Amputation

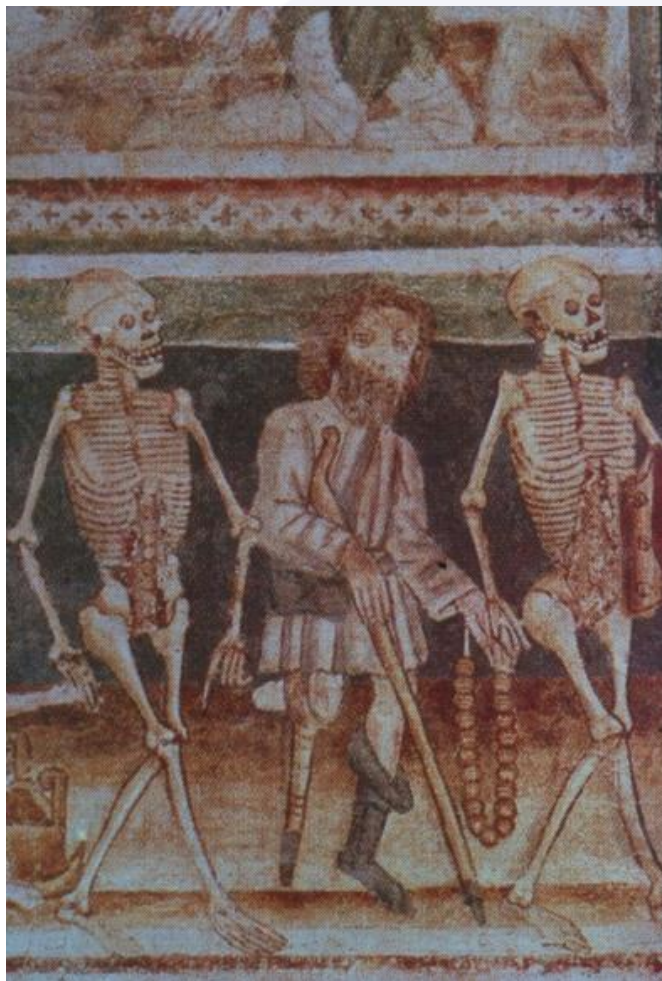
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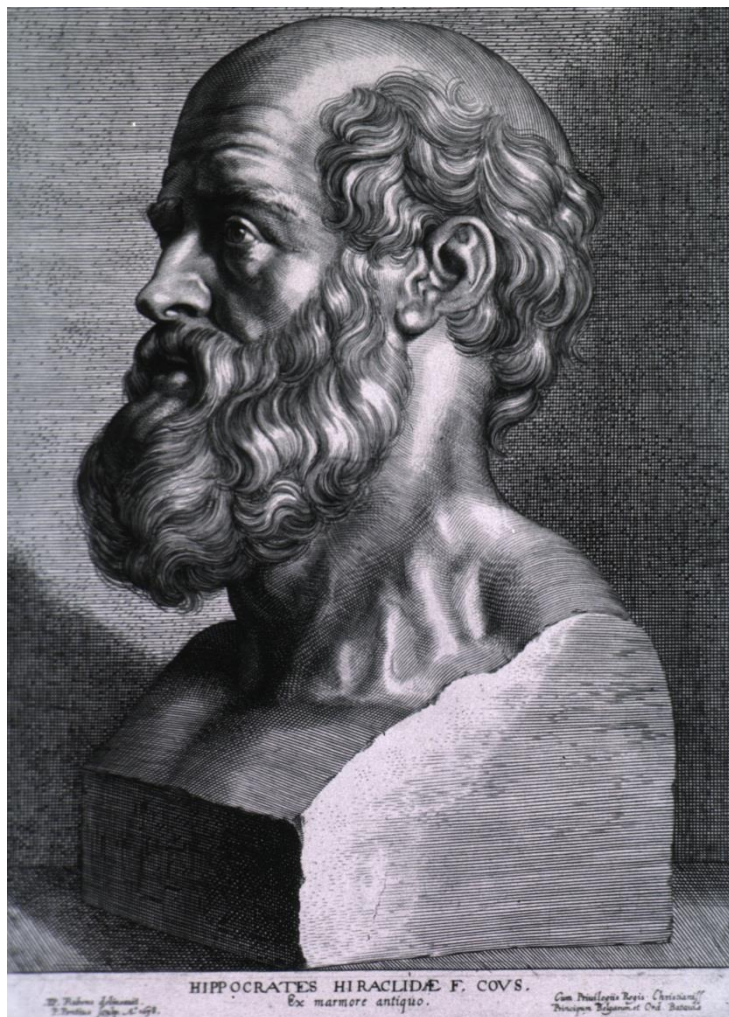


Introduction

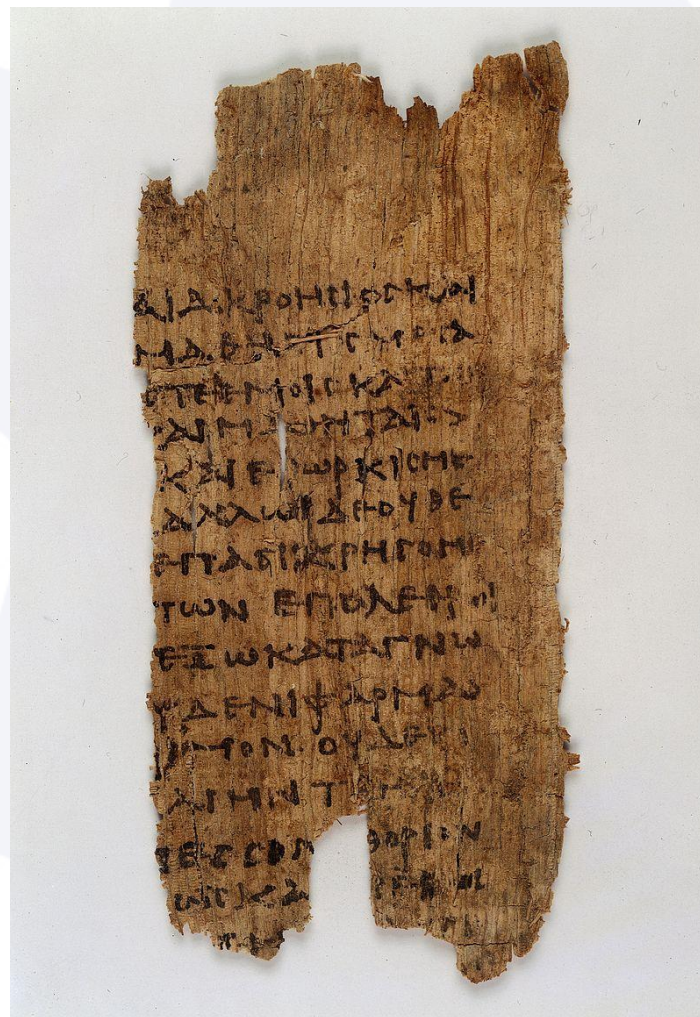


Marinček Č. The iron hand from Slovenia. *Prosthet Orthot Int* 1992;16: 153-156.

Janez iz Kastva, 14th century



Peter Paul Rubens 1638



A fragment of the Oath on the 3rd-century Papyrus Oxyrhynchus



Amputation

Yes?



No?

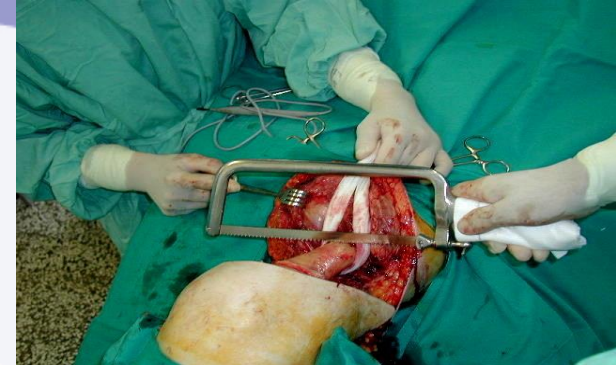




Amputation

* No

- Other vascular surgery?
- Replantation?
- Transplantation?
- Conservative treatment?
- Role of PRM specialist?



Amputation

- * When?
- * Who?
- * The role of PRM specialist?



When?

- * PVD, DM – Deconditioning
- * Injury¹:
 - Lower limb reconstruction is more acceptable psychologically
 - The physical outcome for both is more or less the same

1 – Akula M et al. Injury, Int J Care Injured 2011; 42: 1194 – 7.



Who?

- * Amputation has to be done by a surgeon specialised in amp. surgery – recommendation A BSRM, Australian and Dutch guidelines



Chakrabatry BK. Prosthet Orthot Int 1998; 22: 136 – 46.

Cosgrove CM et al. Ann Roy Coll Surg Eng 2002; 84: 344 – 7.



**Amputation is
not the end but
the beginning of
the new way.**

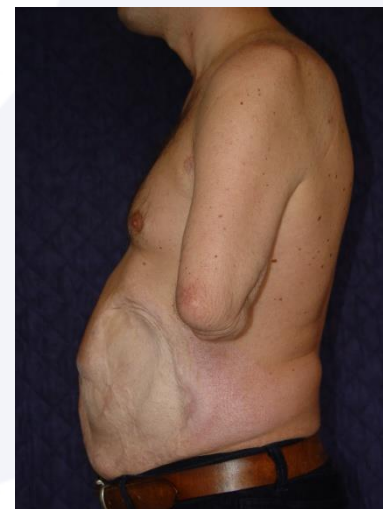
G Murdoch





Role of PRM specialist

- * Before each planned operation surgeon has to consult rehabilitation team and the patient^{1,2}
- * Other role?



1 – Australian guidelines. Amputee care standards in New South Wales 2008

2 – Dutch guidelines. POI 2015; 39: 351 – 71.



After amputation

- * All patients want prosthesis
- * Most wanted is the “best” prosthesis





Outcome Predictors

- *Shape of the stump - ↑ fitting ^{1, 2}
- *Amp. one LL ³
- *More distal amp. ³
- *Cause of amputation – PVD → ↓ outcome ³

1 – Chakrabatry BK. Prosthet Orthot Int 1998; 22: 136 – 46.

2 – Cosgrove CM et al. Ann Roy Coll Surg Eng 2002; 84: 344 – 7.

3 – Sansam K et al. J Rehabil Med 2009; 41: 593 – 603.



Outcome Predictors



- *Residual limb wounds and ulcers
 - Despite use of prosthesis 64% healed in 6 weeks ¹
 - Vacuum-assisted socket system vs standard suction socket after ulcer/wound healing ²

1 – Salawu A et al. Prosthet Orthot Int 2006; 30: 279 – 85.

2 – Traballesi M et al. Eur J Phys Rehabil Med 2012; 48: 613 – 80.



Outcome Predictors

*Up to 30 different comorbidities¹

→39.2% Hypertension

→16.9% Congestive heart failure

→15.1% Chronic pulmonary disease

→13.1% Renal failure²

→8 – 18% Stroke³

1 – Kurichi JE et al. Gerontology 2007; 53: 255 – 9.

2 – Arneja AS et al. Am J Phys Med Rehabil 2015; 94: 257 – 68.

3 – Hebert JS et al. Disabil Rehabil 2012; 34: 1943 – 9.



Outcome

*1 year after rehabilitation and fitting only 9% of persons in institutional care use a prosthesis¹

1 – Remes L et al. Aging Clin Exp Res 2009; 21: 129 – 53.



Outcome Predictors

- *Cognitive impairment is more prevalent among persons after LLA than in the general population ¹

- * $\frac{1}{4}$ had dementia²

- *Memory – only predictive factor for independent donning of prosthesis ³

1 – Coffey L et al. Disabil Rehabil 2012; 34: 1950 – 64.

2 – Schuch V et al. Inter Med Appl Sci 2012; 4: 175 – 80.

3 – Sansam K et al. J Rehabil Med 2009; 41: 593 – 603.



Rehabilitation

- * Everybody will not be fitted with a prosthesis,
- * Everybody can benefit from rehabilitation ¹





Prosthetic prescription

* Who prescribes the prosthesis?

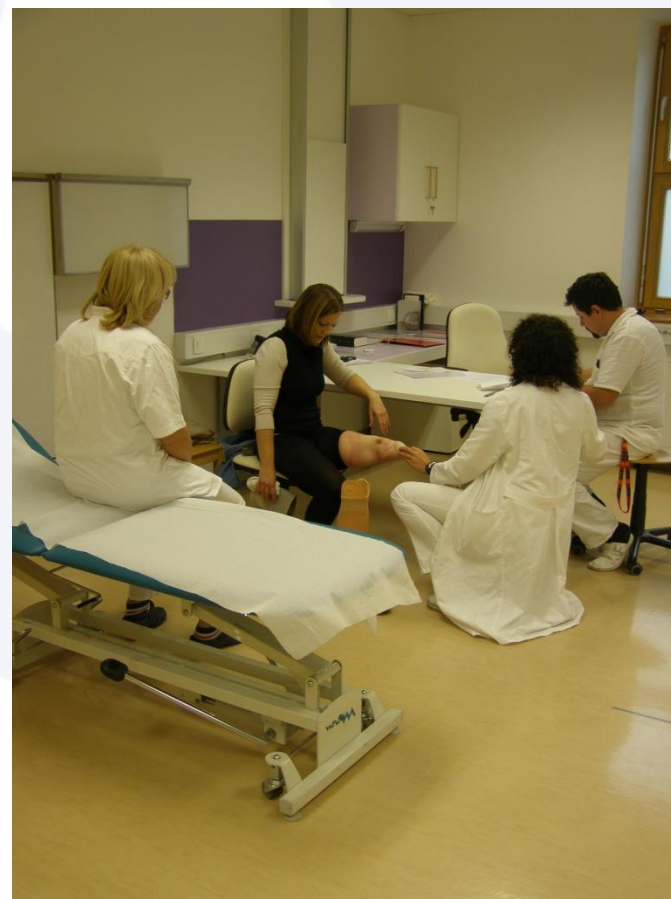
→ MD:

- Surgeon
- PRM specialist

→ Team

→ CPO

→ PT





Prosthetic prescription ¹

- * National clinical guidelines for prescription of LL P Delphy technique:
 - 21 MD
 - 8 CPO
 - 3 PF
- * General:
 - Activity level
 - Amputation level
- * Socket
- * (knee)
- * Foot



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The “Best” Prosthesis





The “Best” Prosthesis

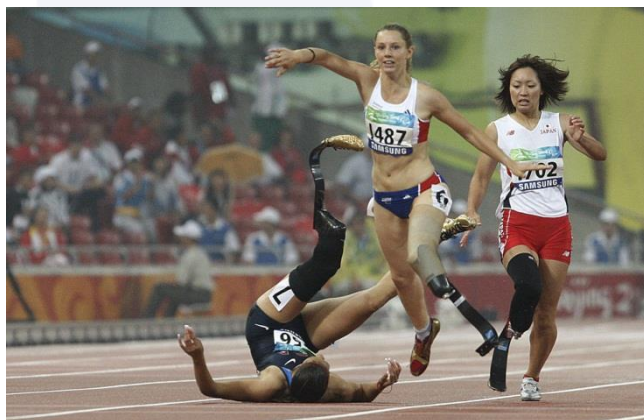
- * For whom?
 - For all users?
 - For individual?





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For which activity?





Work



Burger H. In Murray C (ed). Springer 2010: 101 – 14.



Driving





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Prosthesis – bad fitting





Prosthesis



- * 52 – 80% persons after LLA are at risk of falling^{1, 2}
- * Balance problems – ↑ sway³
- * Asymmetry in body weight³

1– Miller W et al. Arch Phys Med Rehabil 2001; 82: 1031 – 7.

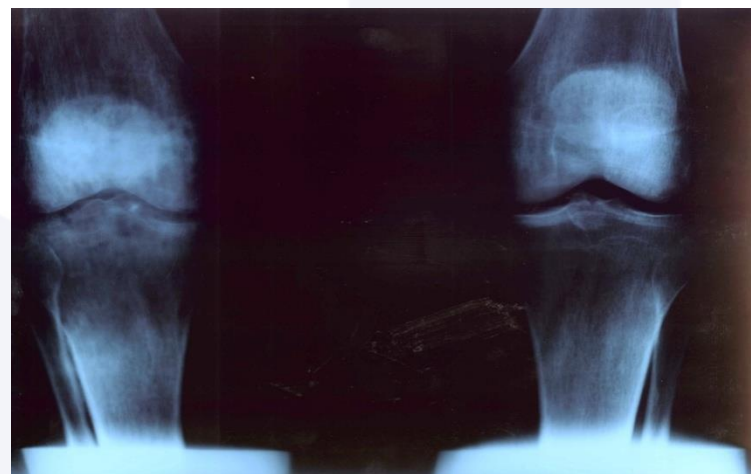
2 – Ülger Ö et al. Top Geriatr Rehabil 2010; 26: 156 – 63.

3 – Xuan Ku P et al. Gait & Posture 2014; 39: 672 – 82.



Prosthesis

- * Persons after LLA have secondary impairments ¹
- * Can prosthesis decrease secondary impairments?

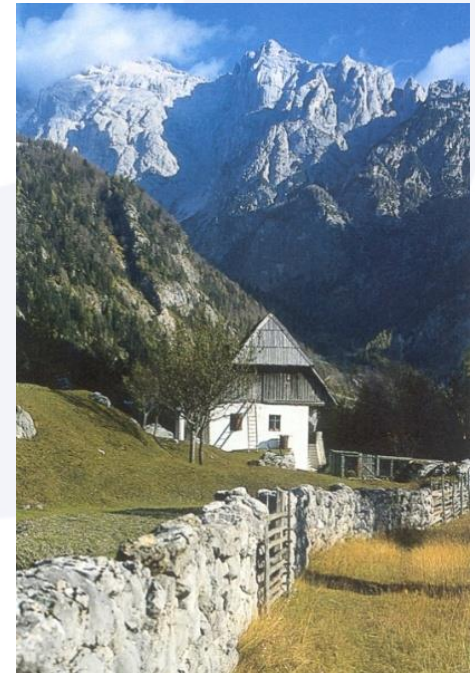


1– Gailey R et al. J Rehabil Res Dev 2008; 45: 15 – 29.



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Prosthesis





Prosthesis

- * To construct the most appropriate prosthesis we must consider the psychological construct of the person.



Malcolm MacLachlan,

ISPO World Congress 2015, Lyon, Fr



Prosthesis

- * Who is the owner of information collected by modern prosthetic components (microprocesor knees, feet)?





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Patients Expectations





Prosthesis

- * Buying a prosthesis/ component privately?





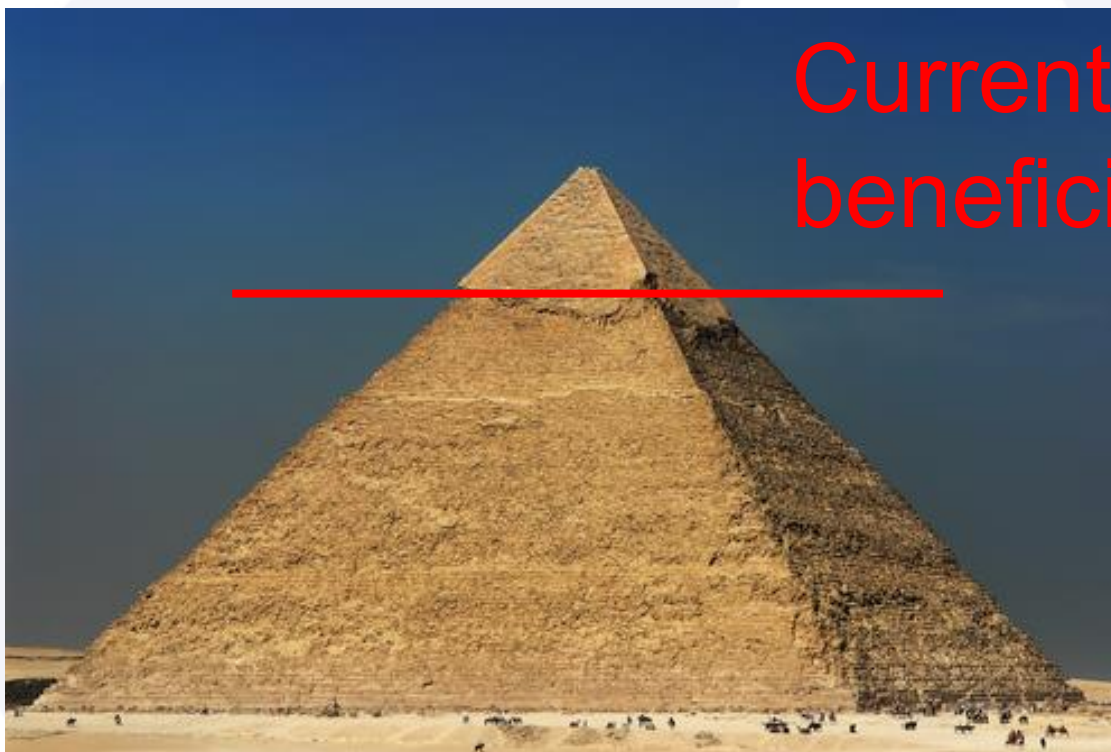
Other Stakeholders

- * Payer
- * Manufacturers
- *





Prosthesis



Current market
beneficiaries

Making high-quality products affordable for all – WHO
(Chapal Khasnabis, ISPO World Congress 2015, Lyon, Fr)



Conclusion

- * There are many ethical issues with no clear answers
- * We need more good clinical studies



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Thank you!