

Return to play na VKB-reconstructie: optie of illusie?

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KNGF Evidence Statement

Revalidatie na voorste-kruisbandreconstructie

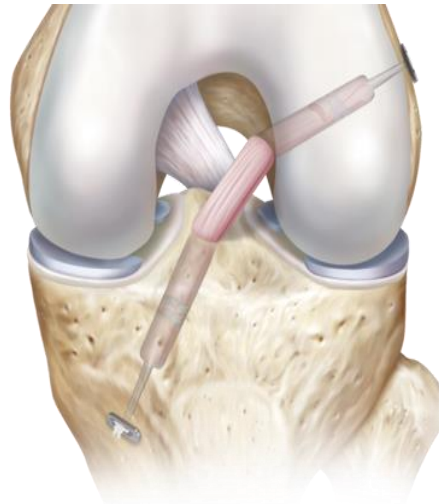
Evidence-based clinical practice update: practice guidelines for anterior cruciate ligament rehabilitation based on a systematic review and multidisciplinary consensus

Nicky van Melick,^{1,2} Robert E H van Cingel,^{3,4} Frans Brooijmans,⁵ Camille Neeter,⁶ Tony van Tienen,⁷ Wim Hullegie,⁸ Maria W G Nijhuis-van der Sanden¹

Br J Sports Med 2016;50(24):1506-1515



Voorste-kruisbandreconstructie



Return to play na VKB-R

Anno 2013:

Knee Surg Sports Traumatol Arthrosc (2013) 21:869–879
DOI 10.1007/s00167-012-2030-6

KNEE

Assessment of functional performance after anterior cruciate ligament reconstruction: a systematic review of measurement procedures

Nicky Engelen-van Melick · Robert E. H. van Cingel ·
Marsha P. W. Tijssen · Maria W. G. Nijhuis-van der Sanden

Alleen gebruik kracht- en hoptesten. Vaak maar 1 of 2 testen in totaal.



Return to play na VKB-R

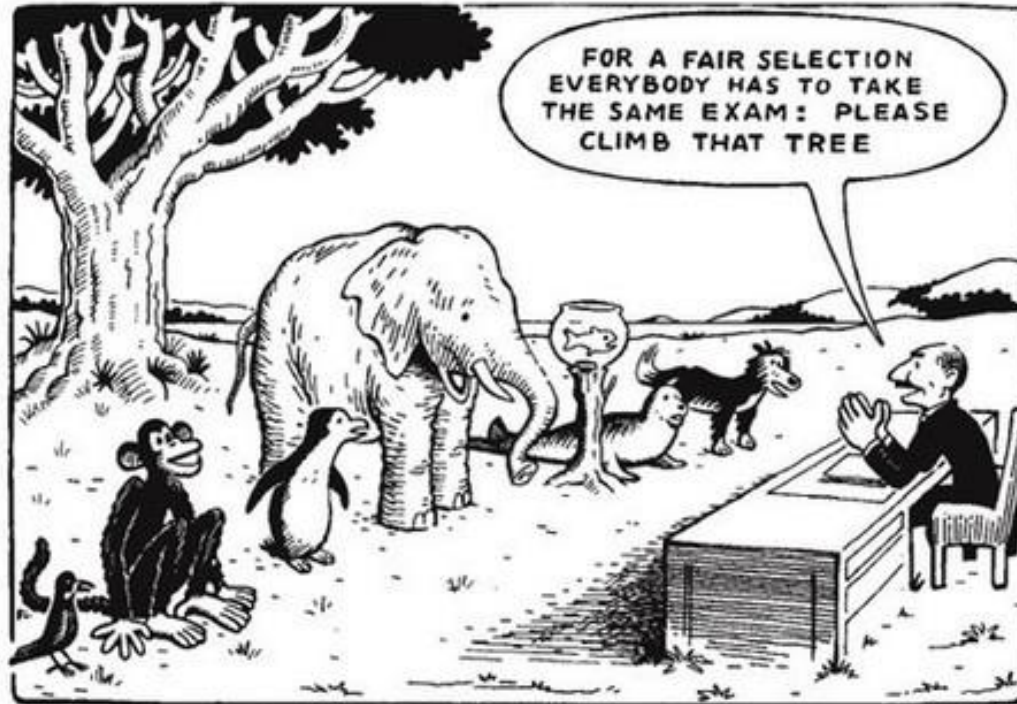
Anno 2019:

- Tijd is het meest voorkomende criterium genoemd door fysio's (85%) en in 42% van de gevallen zelfs het enige criterium!
- Kracht wordt in 41% van de gevallen gebruikt
- Hoptesten in 15% van de gevallen

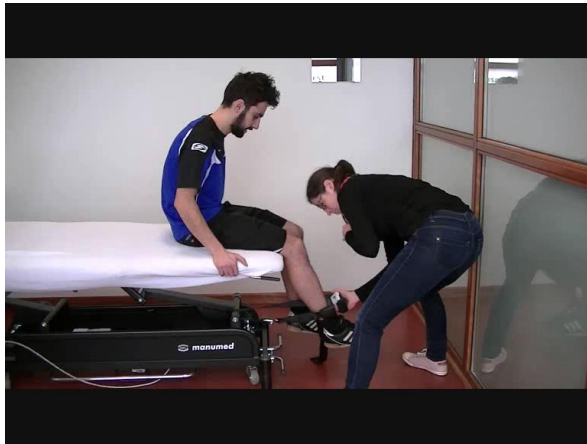
(Burgi 2019)



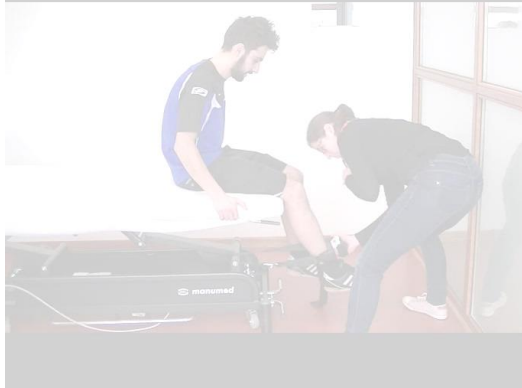
Return to play na VKB-R



Kwantitatieve RTP criteria



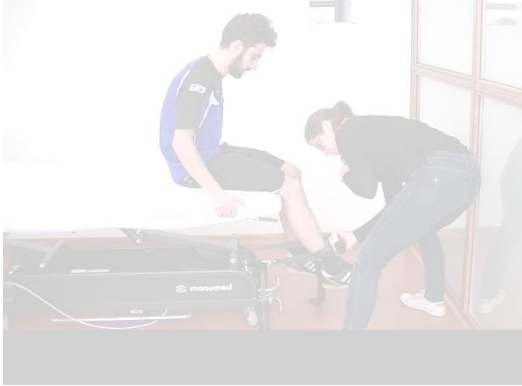
Kwantitatieve RTP criteria



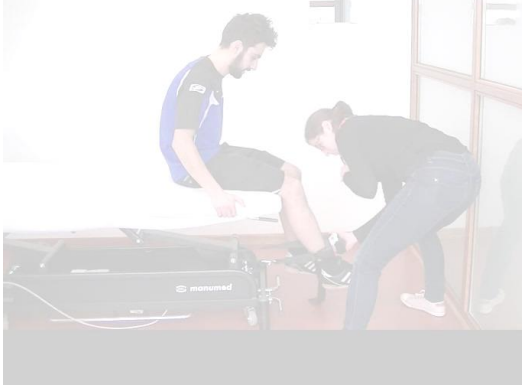
Kwantitatieve RTP criteria



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Kwantitatieve RTP criteria



Kwantitatieve RTP criteria

Niveau 1 bewijs:

Er lijkt geen relatie te zijn tussen behalen kwantitatieve RTP criteria en reductie in re-rupturen

(Paterno 2018, Losciale 2018, Webster 2019)

Echter:

- Re-rupturen: 60% reductie bij behalen criteria
- Contralaterale rupturen: toename van 235% bij behalen van criteria

(Webster 2019)



Kwantitatieve RTP criteria

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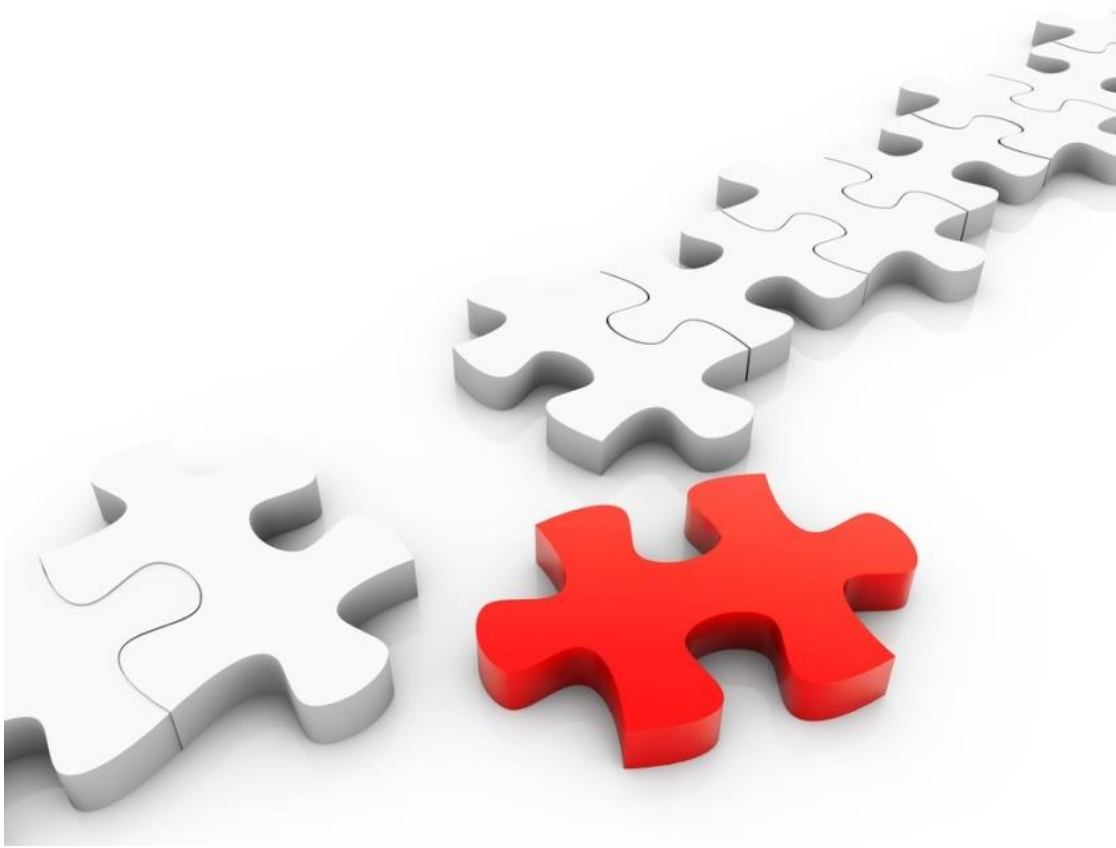
- Re-rupturen: 60% reductie bij behalen criteria
- Contralaterale rupturen: toename van 235% bij behalen van criteria

(Webster 2019)



En nu?

Kwantitatieve criteria als minimale vereiste?





N=158	Test	LSI (%)	Geslaagd?
Kracht	Quadriceps isometrisch	100	84
	Hamstrings isometrisch	94	64
	Hamstrings excentrisch	95	62
	Gluteï isometrisch	102	86
Hoptesten	Vertical jump	93	64
	Hop for distance	98	88
	Side hop	94	68

19% haalt alle kwantitatieve RTP criteria



Oplossing?



Kwaliteit van bewegen

Objectiveren van de neuromusculaire controle.

Neuromusculaire controle =

het geheel aan onbewuste motorische reacties die verantwoordelijk zijn voor dynamische gewrichtsstabiliteit.



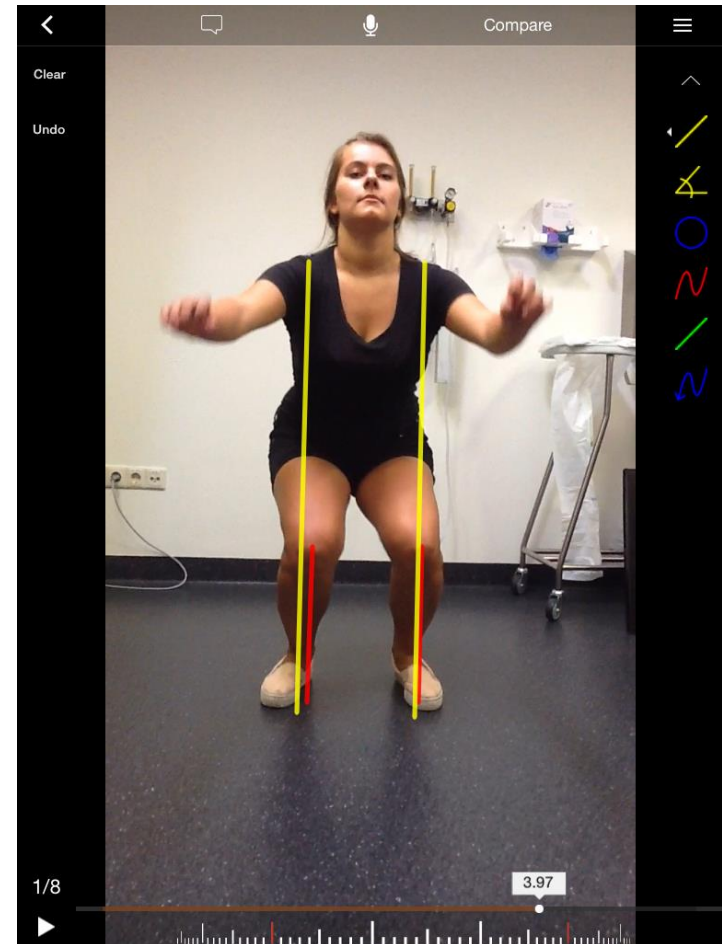
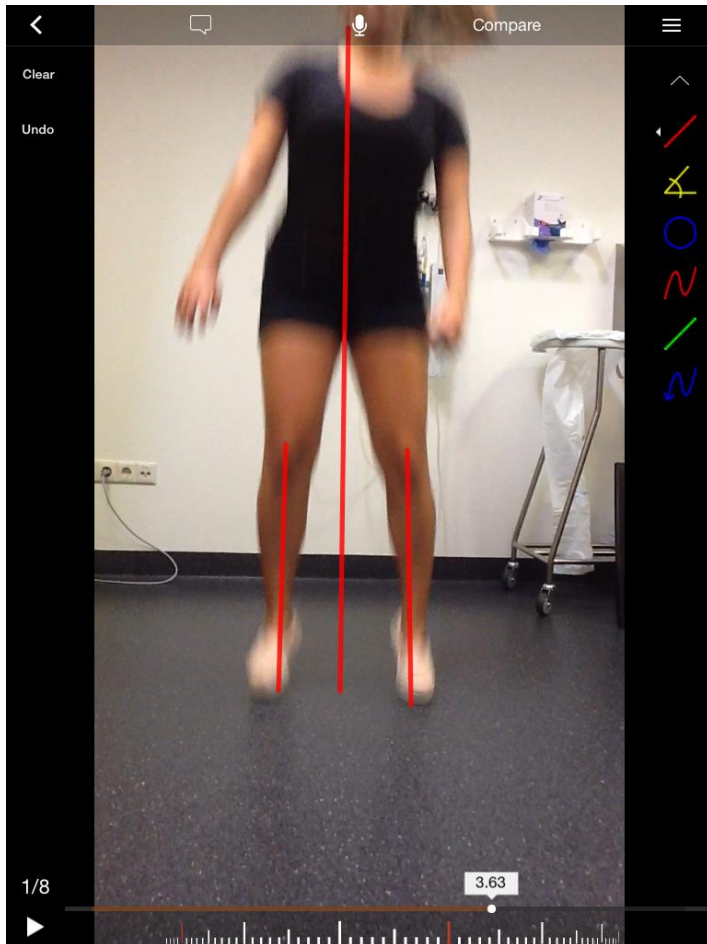
Kwaliteit van bewegen



Kwaliteit van bewegen

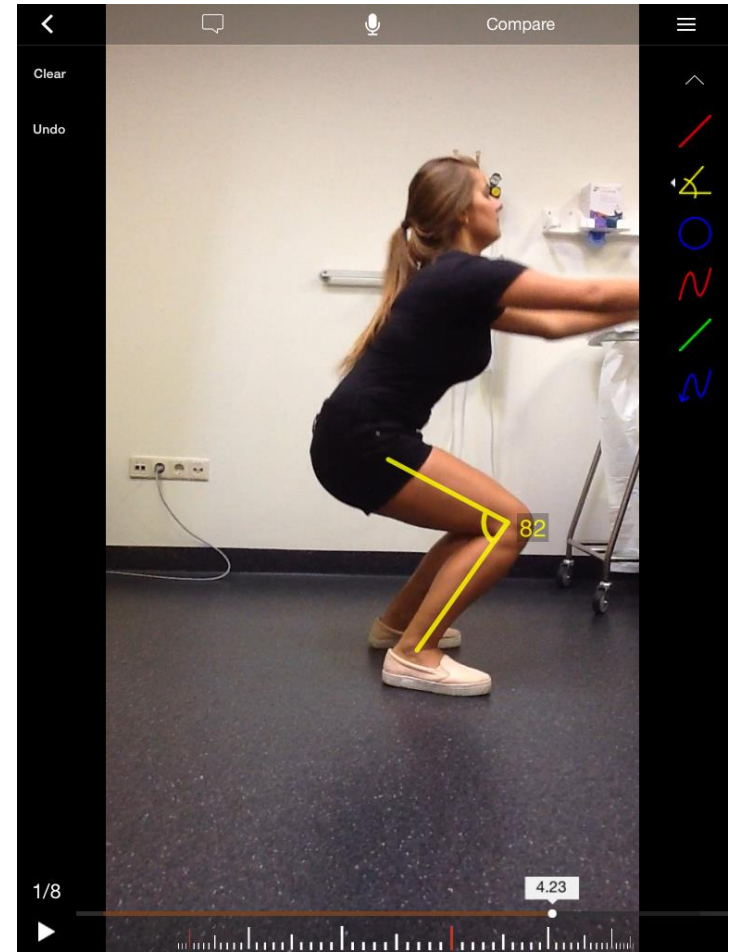
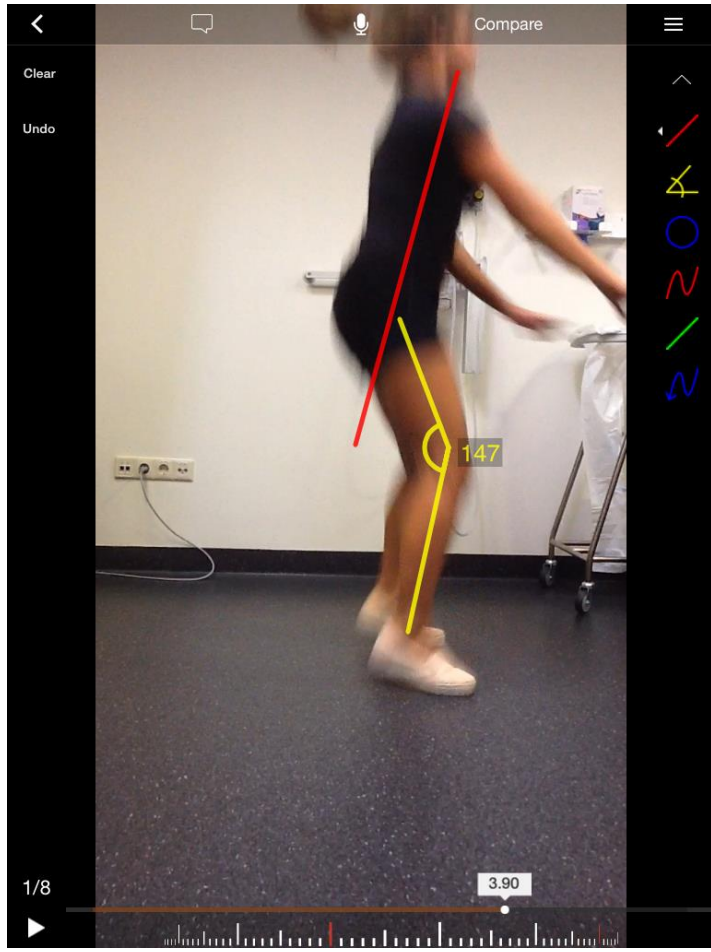


CMJ met LESS score



Filmen met Hudl technique (app)





Landing Error Scoring System Item	Operational Definition of Error	Scoring
Knee flexion: initial contact	The knee is flexed less than 30° at initial contact.	0 = Absent 1 = Present
Hip flexion: initial contact	The thigh is in line with the trunk at initial contact.	0 = Absent 1 = Present
Trunk flexion: initial contact	The trunk is vertical or extended on the hips at initial contact.	0 = Absent 1 = Present
Ankle plantar flexion: initial contact	The foot lands heel to toe or with a flat foot at initial contact.	0 = Absent 1 = Present
Medial knee position: initial contact	The center of the patella is medial to the midfoot at initial contact.	0 = Absent 1 = Present
Lateral trunk flexion: initial contact	The midline of the trunk is flexed to the left or the right side of the body at initial contact.	0 = Absent 1 = Present
Stance width: wide	The feet are positioned greater than shoulder width apart (acromion processes) at initial contact.	0 = Absent 1 = Present
Stance width: narrow	The feet are positioned less than shoulder width apart (acromion processes) at initial contact.	0 = Absent 1 = Present
Foot position: external rotation	The foot is externally rotated more than 30° between initial contact and maximum knee flexion.	0 = Absent 1 = Present
Foot position: internal rotation	The foot is internally rotated more than 30° between initial contact and maximum knee flexion.	0 = Absent 1 = Present
Symmetric initial foot contact: initial contact	One foot lands before the other foot or 1 foot lands heel to toe and the other foot lands toe to heel.	0 = Absent 1 = Present
Knee-flexion displacement	The knee flexes less than 45° between initial contact and maximum knee flexion.	0 = Absent 1 = Present
Hip-flexion displacement	The thigh does not flex more on the trunk between initial contact and maximum knee flexion.	0 = Absent 1 = Present
Trunk-flexion displacement	The trunk does not flex more between initial contact and maximum knee flexion.	0 = Absent 1 = Present
Medial-knee displacement	At the point of maximum medial knee position, the center of the patella is medial to the midfoot.	0 = Absent 1 = Present
Joint displacement	Soft: the participant demonstrates a large amount of trunk, hip, and knee displacement. Average: the participant has some, but not a large amount of, trunk, hip, and knee displacement.	0 = Soft 1 = Average
Overall impression	Stiff: the participant goes through very little, if any, trunk, hip, and knee displacement. Excellent: the participant displays a soft landing with no frontal-plane or transverse-plane motion. Average: all other landings. Poor: the participant displays large frontal-plane or transverse-plane motion, or the participant displays a stiff landing with some frontal-plane or transverse-plane motion.	2 = Stiff 0 = Excellent 1 = Average 2 = Poor



Niveau 3 bewijs:

- Dynamische knievalgus, gebrek aan neuromusculaire controle van de romp in het frontale vlak en te kleine knie/heup flexiehoeken voorspellen optreden primaire VKB# bij vrouwen *(Hewett 2005, Zazulak 2007, Leppänen 2017)*
- LESS-score voorspelt primaire VKB# bij sporters (sensitiviteit 86%, cut-off: 5) *(Padua 2015)*
- Dynamische knievalgus en te kleine knie flexiehoek bij landing voorspelt VKB re-ruptuur of contralaterale ruptuur *(Paterno 2010)*





Kwaliteit van bewegen

N=158	Score	Geslaagd?
Single-leg hop-and-hold		
<i>Geopereerde been</i>		86
<i>Niet-geopereerde been</i>		87
LESS bij CMJ		
<i>Geopereerde been</i>	4.8	64
<i>Niet-geopereerde been</i>	4.8	65

51% haalt alle kwalitatieve RTP criteria




Vermoeidheid

Knee Surgery, Sports Traumatology, Arthroscopy
<https://doi.org/10.1007/s00167-018-5149-2>

KNEE



Fatigue affects quality of movement more in ACL-reconstructed soccer players than in healthy soccer players

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	VKB N-F	VKB F	Con. N-F	Con. F
LESS score	3.6*	6.8**	3.7	4.3
% dat criterium <6 niet haalt	14	86**	11	32



Meest voorkomende “fouten”

- Knieflexie hoek $< 30^\circ$ bij initieel contact
- Romp lateroflexie bij initieel contact
- **Asymmetrisch voetcontact**
- Dynamische knie valgus tijdens landing

Onder vermoeidheid toename van:

- Knieflexie hoek $< 30^\circ$ bij initieel contact
- **Asymmetrisch voetcontact**

→ Meestal landt de voet van het niet-geopereerde been als eerste!!



Knee Surg Sports Traumatol Arthrosc
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Functional performance 2–9 years after ACL reconstruction: cross-sectional comparison between athletes with bone–patellar tendon–bone, semitendinosus/gracilis and healthy controls

Nicky van Melick^{1,2} · Robert E. H. van Cingel^{3,4} · Tony G. van Tienen⁵ ·
Maria W. G. Nijhuis-van der Sanden⁴



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Toekomst

- Nieuwe RTP testen ontwikkelen?
- Risicoprofiel patiënt maken?
 - Voorspellen wie risico loopt op re-ruptuur
 - Die patiënten niet laten terugkeren?





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BEDANKT!

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