

Měření v biomechanice

KT

Základní analýzy

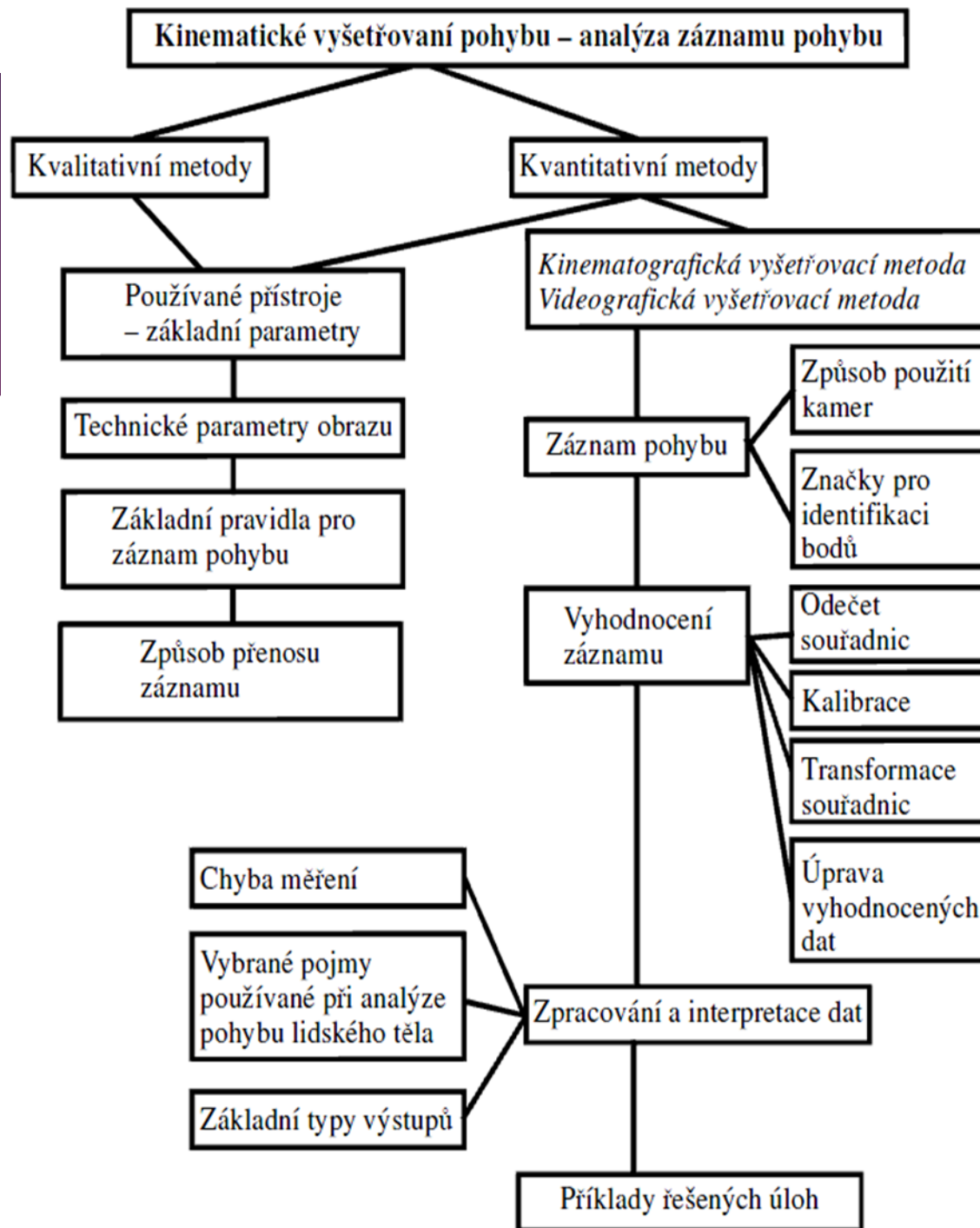
- ▶ Kinematická analýza (čas, dráha, rychlost, zrychlení, úhel, úhlová rychlost, úhlové zrychlení)
- ▶ Dynamická analýza (analýza sil, tlaků, impulsů sil, momentů sil,...)
- ▶ Elektomyografie (aktivita kosterních svalů)
- ▶ Mechanické vlastnosti tkání (zatížení a deformace)

Kinematická analýza – metody

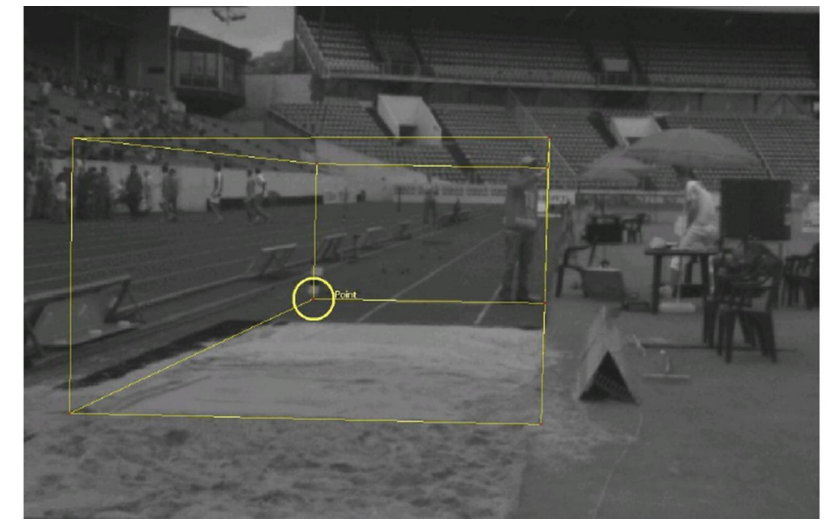
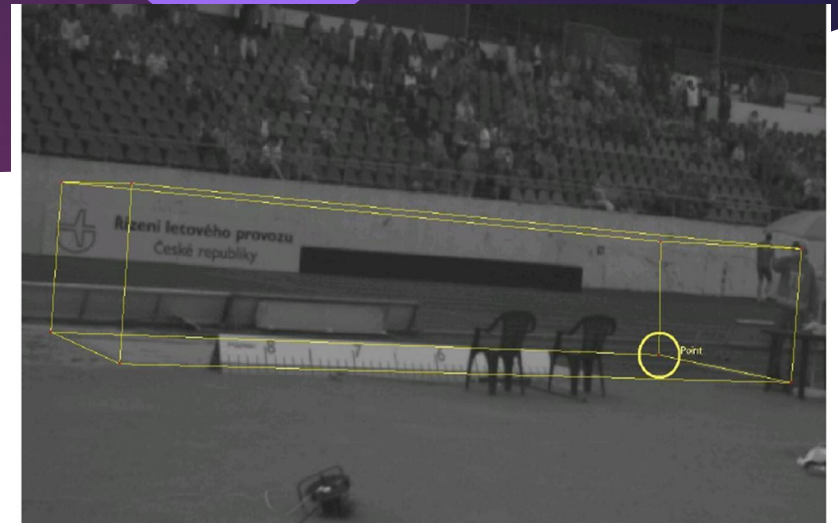
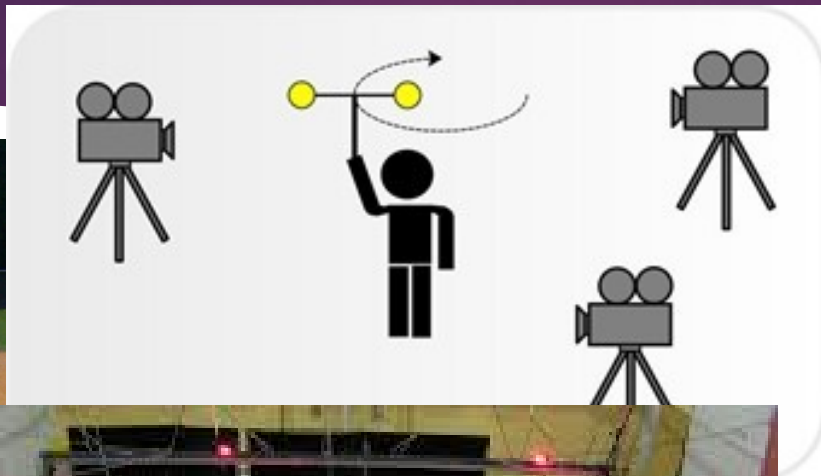
- ▶ Chronometrie
- ▶ Goniometrie
- ▶ Speedometrie
- ▶ Akcelerometrie
- ▶ Kinematografie

(Libor Soumar (2011): Kinematická analýza;
http://pokrok.ujep.cz/elektronicka_knihovna/Kinematicka_analyza.pdf)

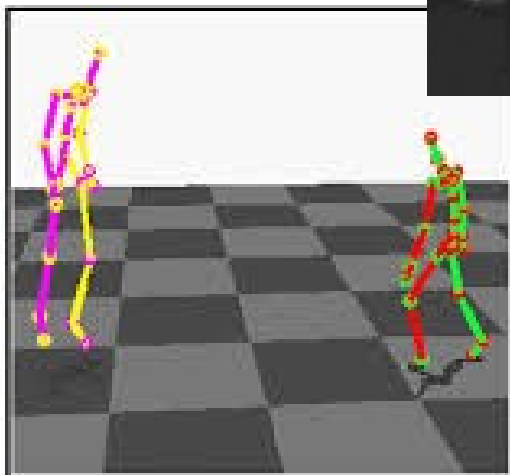
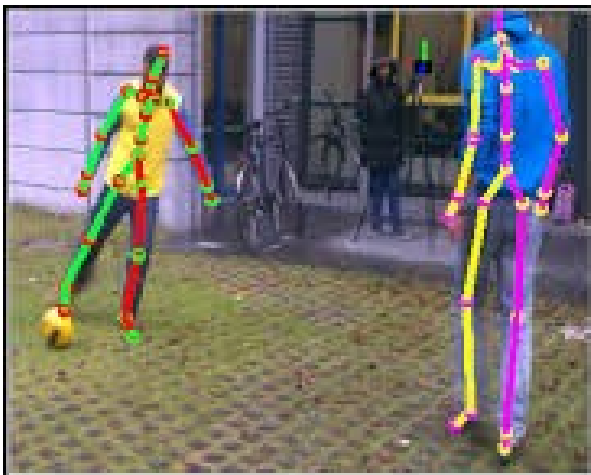
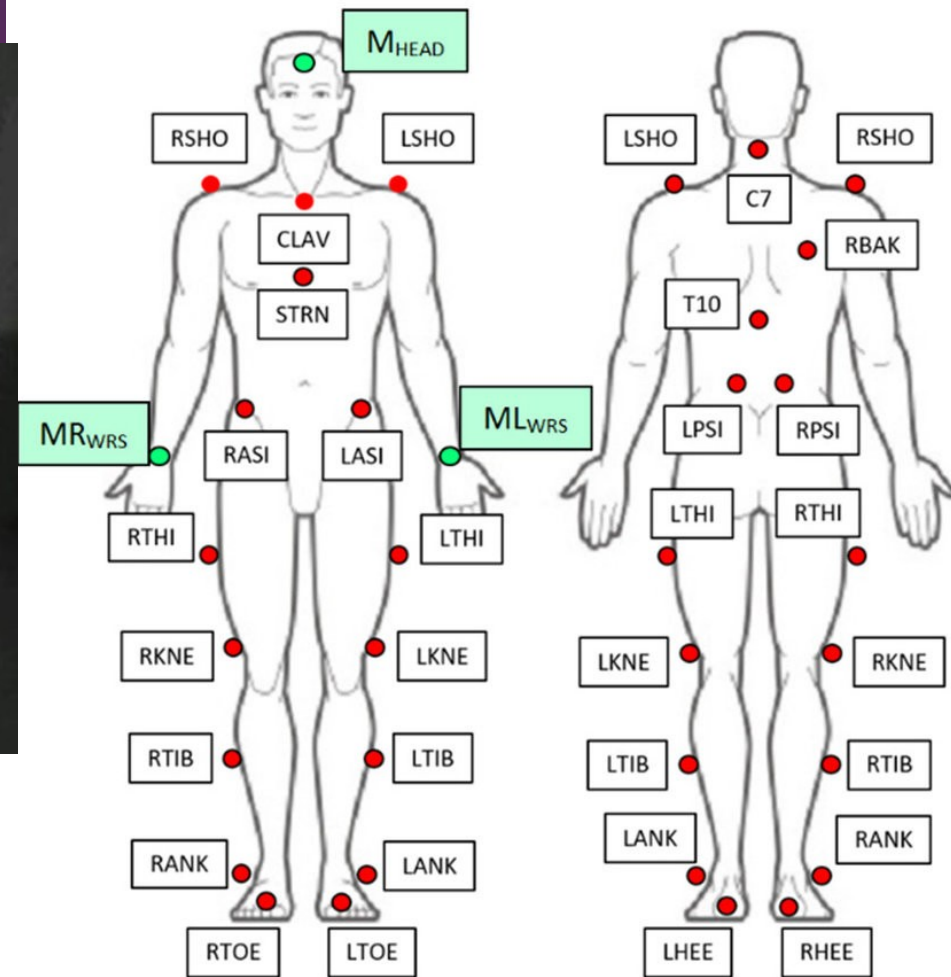
Kinematografie



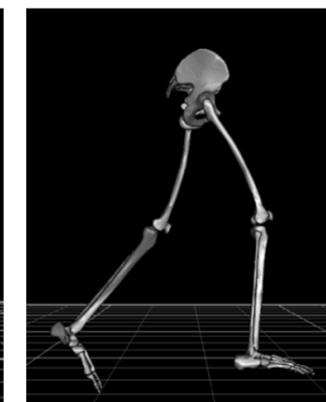
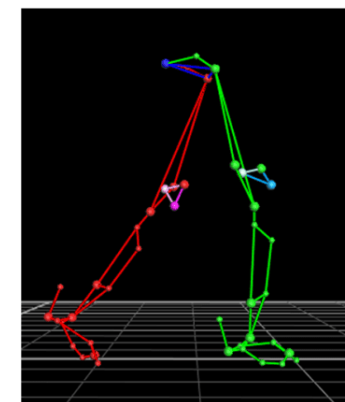
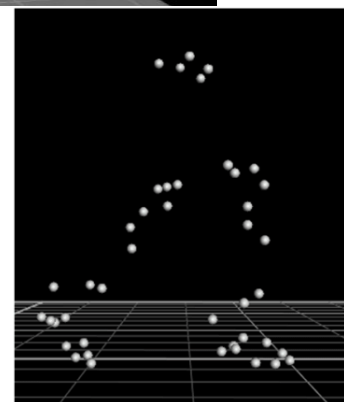
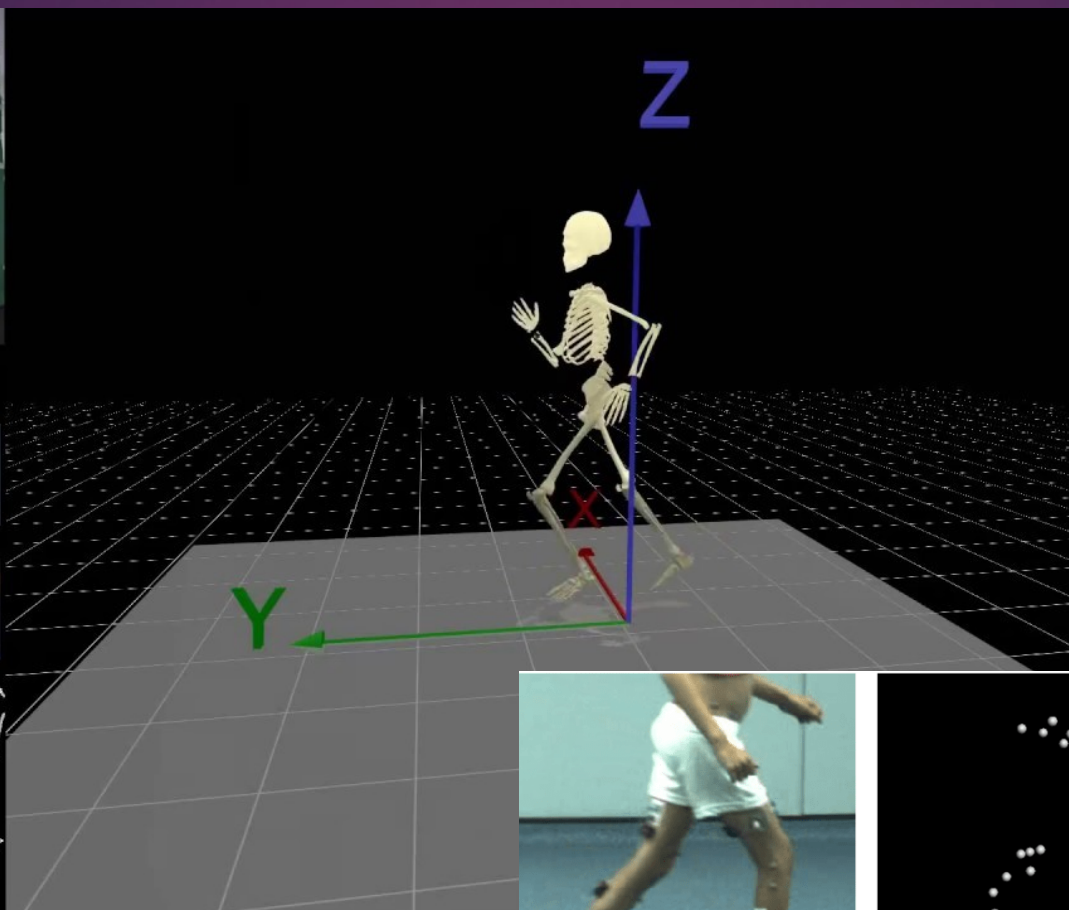
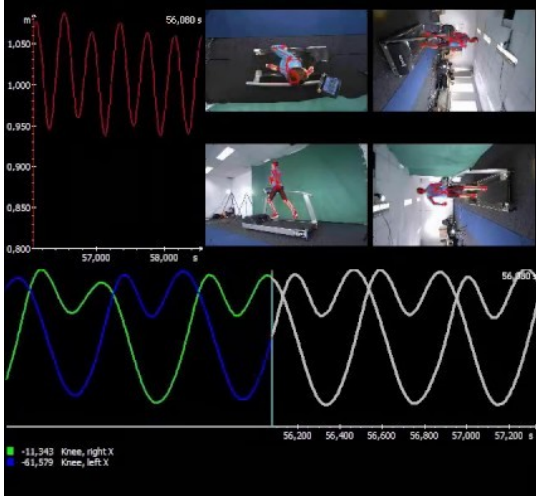
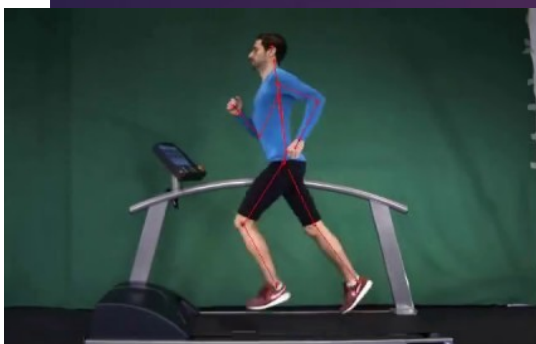
Kalibrace prostoru



Identifikace bodů



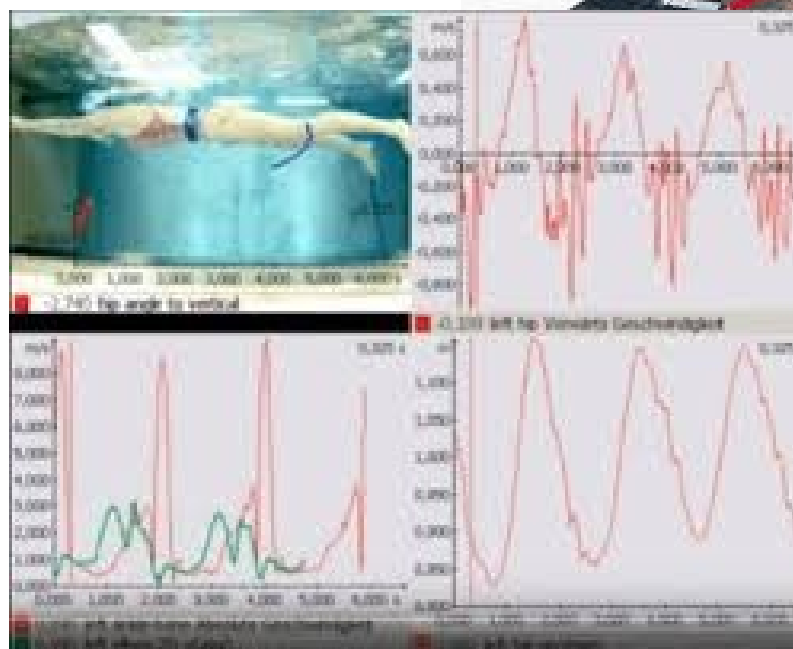
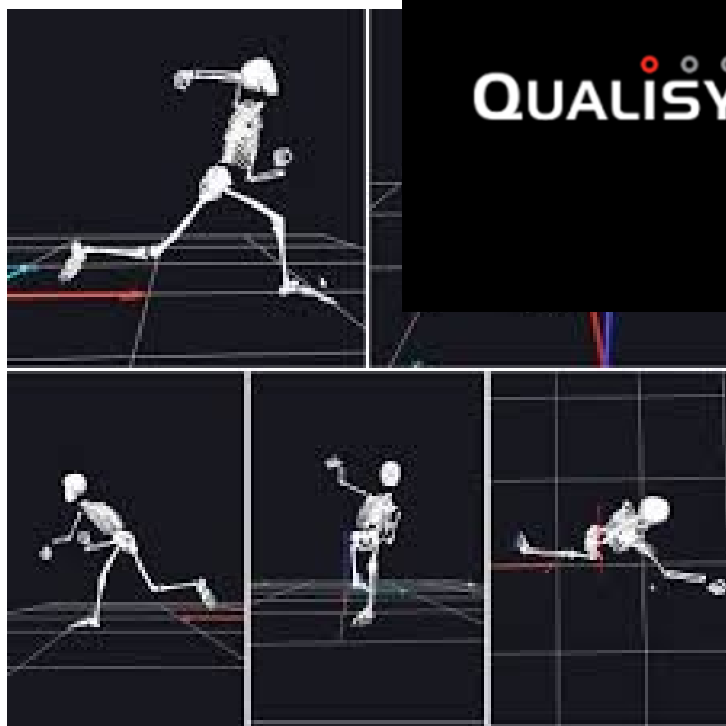
Zpracování a vyhodnocení záznamu



Systemy pro analýzu pohybu

VICON

QUALISYS



Odkazy – kinematografická metoda

- ▶ Sports Biomechanics Analysis - Simi Markerless Motion Capture
<https://www.youtube.com/watch?v=PEAKfac37RU>
- ▶ Vicon Biomechanics and Sports Science Showreel 2018
<https://www.youtube.com/watch?v=uPn26JbRN4g>
- ▶ Swimming: A study of biomechanics using underwater motion capture
<https://www.youtube.com/watch?v=qtXz6qocciM>
- ▶ Swim Analysis - Biomechanics of front crawl swimming
https://www.youtube.com/watch?v=f8tZfo_RJDM

Programy pro zpracování dat - videozáznamu

Dartfish - <https://www.dartfish.com/>

Kinovea - <https://www.kinovea.org/>

▶ Dartfish Express 3.0 VIDEO ANALYSIS APP

<https://www.youtube.com/watch?v=E8wCSO9dHkc>

▶ Kinovea

<https://www.youtube.com/watch?v=CR33qxOHBck>

▶ Kinovea Basic tools Part 1

https://www.youtube.com/watch?v=20wOlps_Nj0