Mavzu: Inson tanasi va harakatlarini biomexanik tavsiflari. Kinematika. Kinematik tavsiflar

Reja:

1. Mexanik harakat.Traektoriya.
2. Tezlik. Harakatning vaqt tavsiflari.
3. To’g’ri chiziqli tekis harakat.
4. Tezlanish. Erkin tushish va uning tezlanishi.
5. Aylanma harakat.Egri chiziqli harakat.
6. Inson harakatlarini belgilovchi elementlari.

Тайёрлади: доцент А.Акбаров

Adabiyolar:

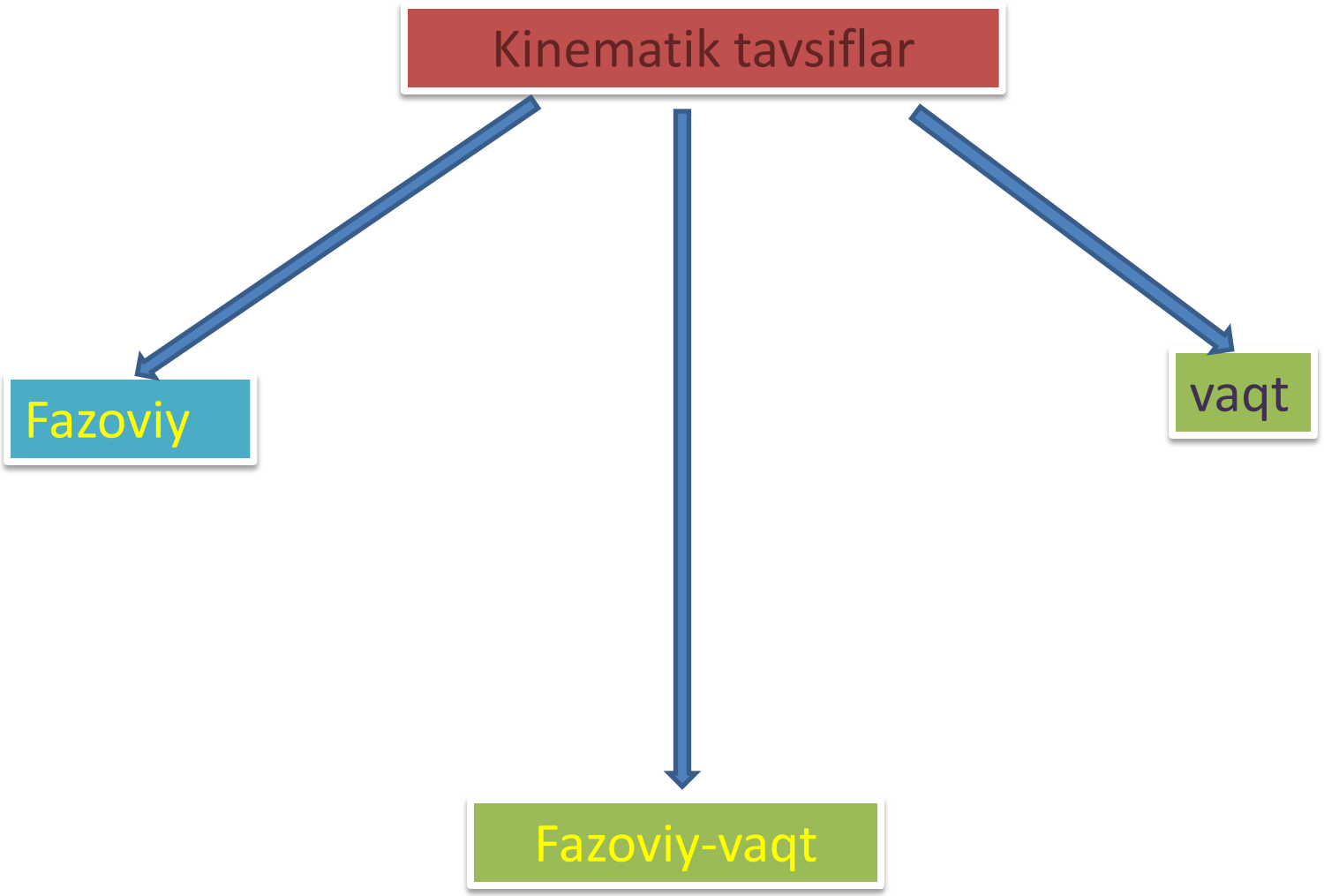
1.Алламуротов Ш.И.,Нурмухамедов А.М.Спорт биомеханикаси:Дарслик жисмоний тарбия институти талабалари учун мўлжалланган.-Тошкент: «Lider Press» нашриёти,2009 й.-222 бет.

2.Бернштейн Н.А. Биомеханика и физиология движений: Избранные психологические труды/Н.А.Бернштейн;Под.редак.В.П.Зинченко.-3-е изд. - М.: Издательство Московского психосоциального института; Воронеж: Издательство НПО «МОДЭК»,2008.-688с.-(Серия Психология России)

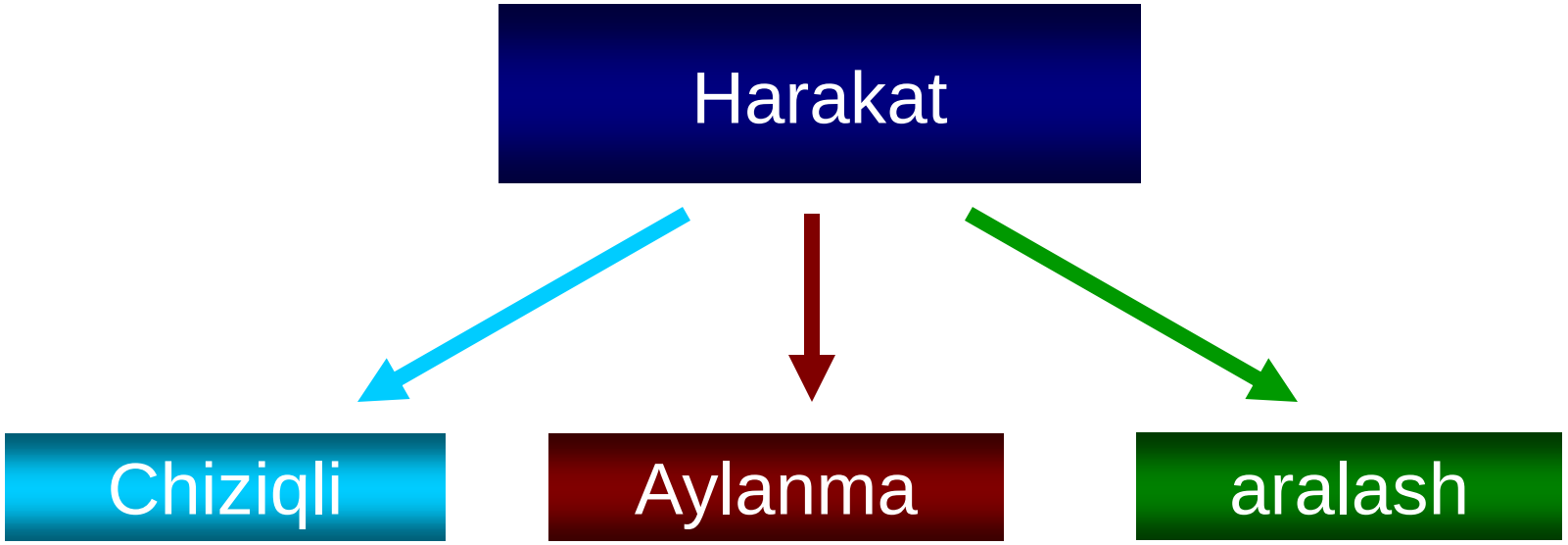
3. Дубровский В.И., В.Н.Федорова. Биомеханика: учебник для вузов -М.: Издательство « ВЛАДОС-ПРЕСС», 2008.-669с.

4. Донской Д. Д., Зациорский В. М. Биомеханика: Учебник для институтов физической культуры. - М. : Физкультура и спорт, 1979. - 264 с.

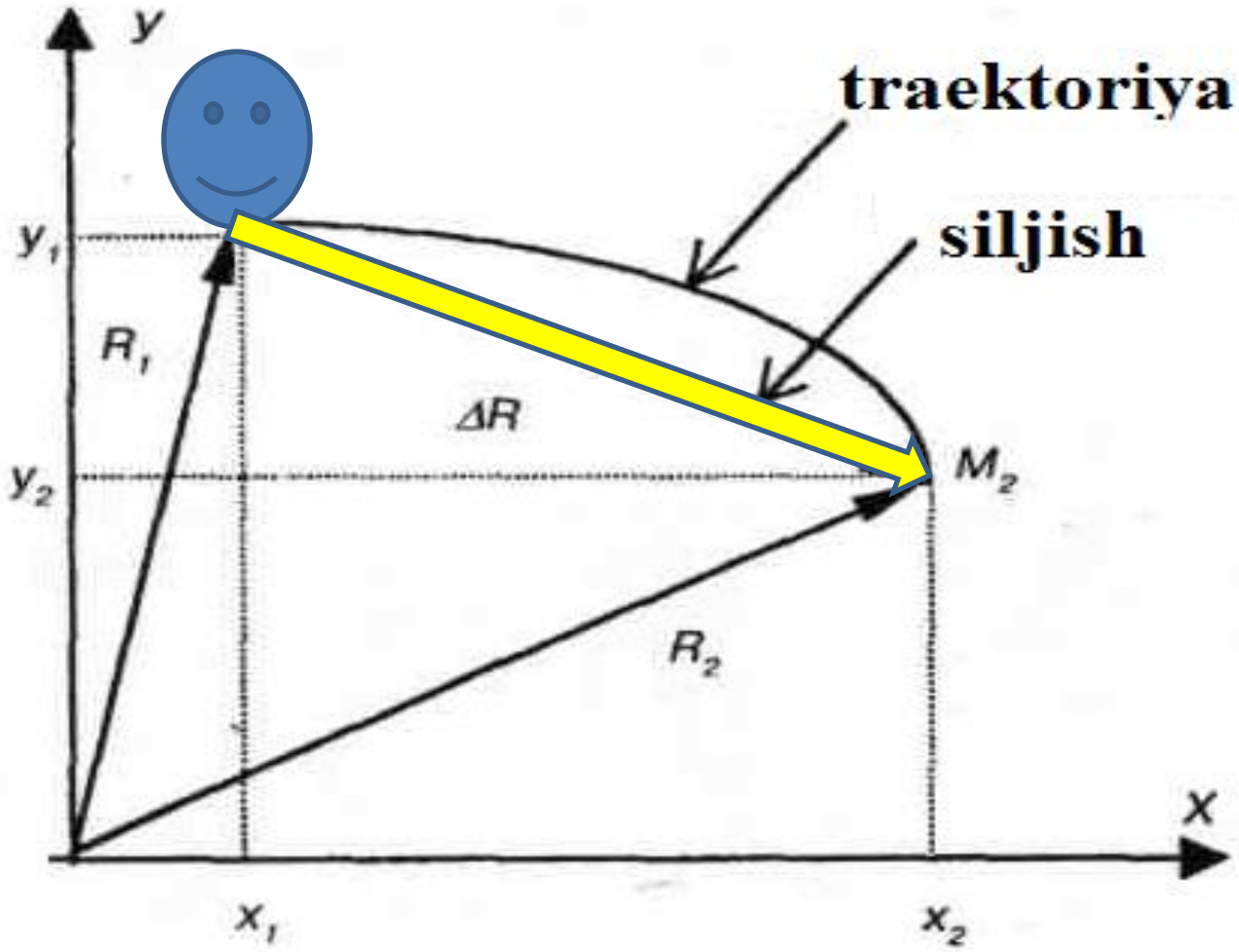
5.Уткин В. Л. – «Биомеханика физических упражнений». Учеб. пособие для студентов фак. Физ. воспитания пед. ин-тов и для ин-тов физ. культуры по спец. «Физ. воспитание».— М.:Изд. «Просвещение», 1989.— 210 с.: ил.


Kinematik tavsiflar
Fazoviy
Fazoviy-vaqt
vaqt

Harakat turlari



Nuqtaning traektoriyasi va siljishi



Tezlik va tezlanishni aniqlash formulalari

$$v = \frac{s}{t} \qquad a = \frac{v_2 - v_1}{t}$$

s-yo'l,m;t-vaqt,s;V_1, V_2-boshlang'ich va t vaqtdan co'ngi tezliklar,m/s; a-tezlanish,m/s^2

Chiziqli harakat

Tana qismlari bir tekislik bo’ylab siljiydi:

- Bir distantsiya bo’yicha
- Bir yo’nalishda
- Bir vaqtda
- Bir hil tezlikda

Tezlanish

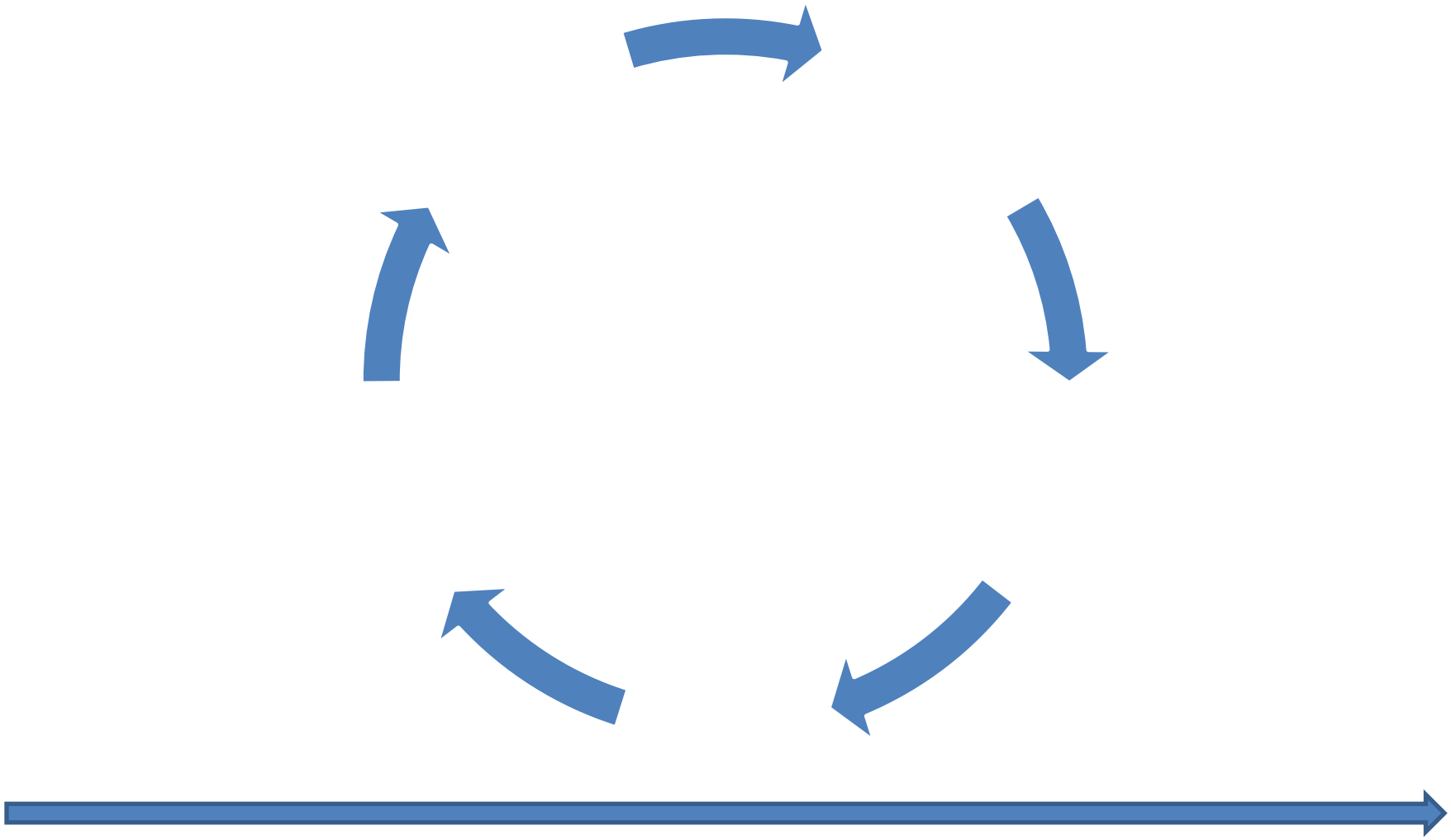
Tezlanish quyidagi hokatlarda yuzaga keladi:

- Harakat tezligi o’zgarganda (oshsa yoki kamaysa)
- Harakat yo’nalishi o’zgarganda
- Tana zvenolarini aylanish o’qiga nisbatan holati o’zgarganda

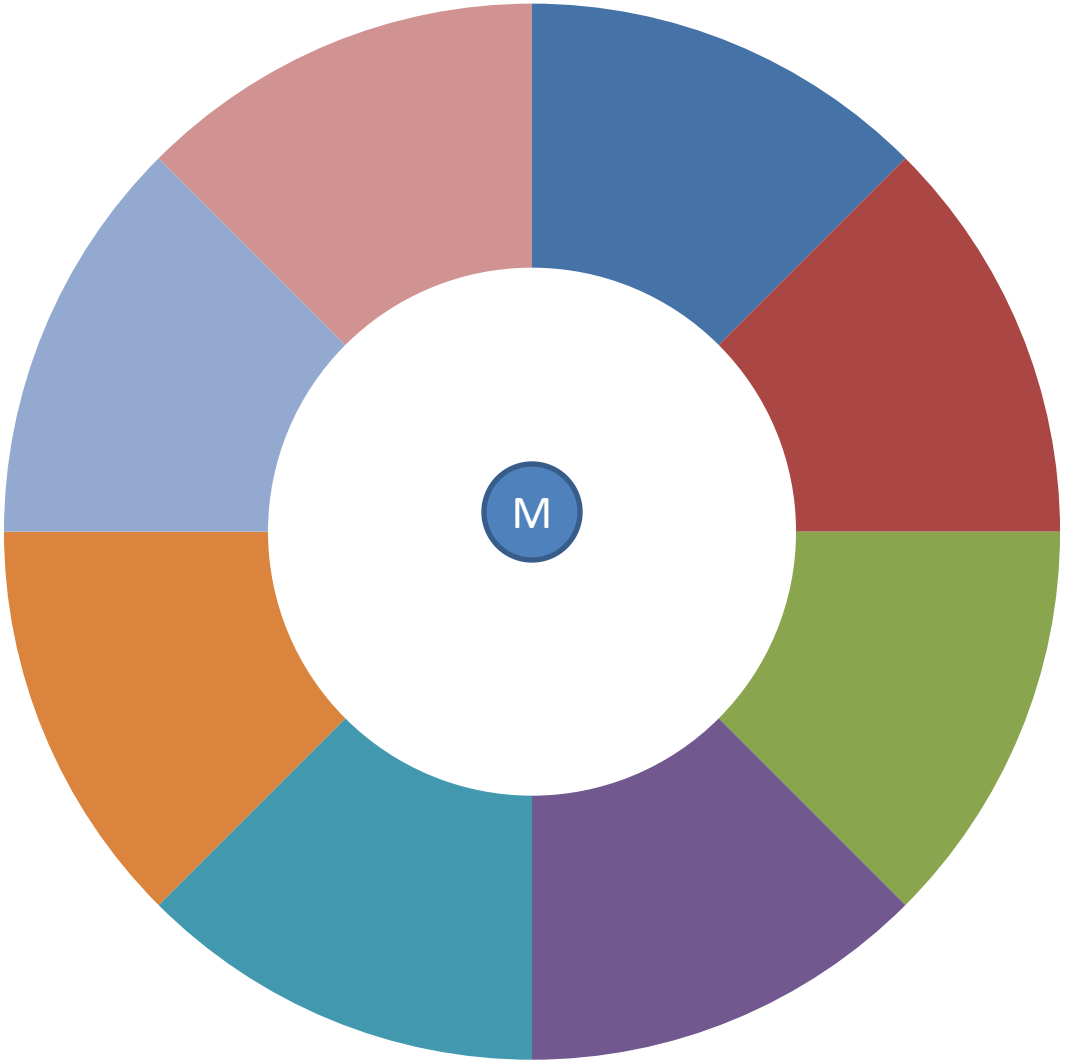
Jismning erkin tushishi

Jismning erkin tushishi

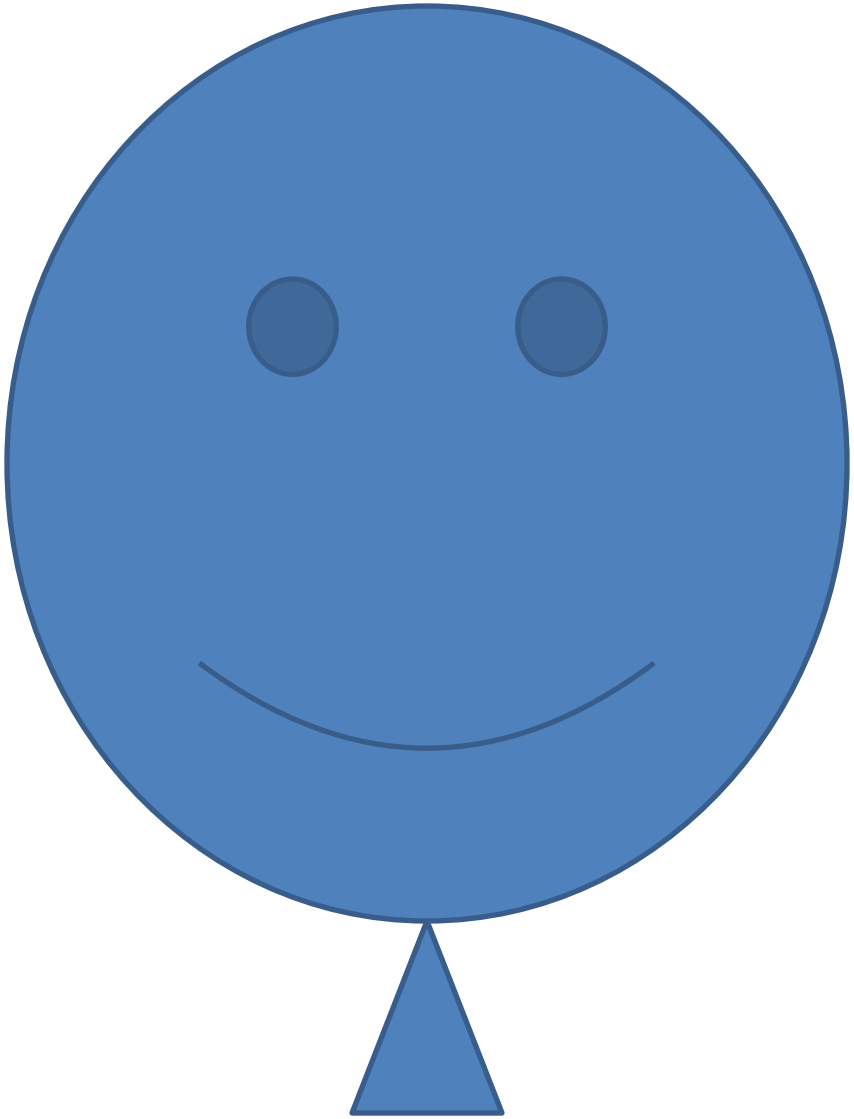
Aylanma harakat



Aylanma harakat



Aylanma harakat

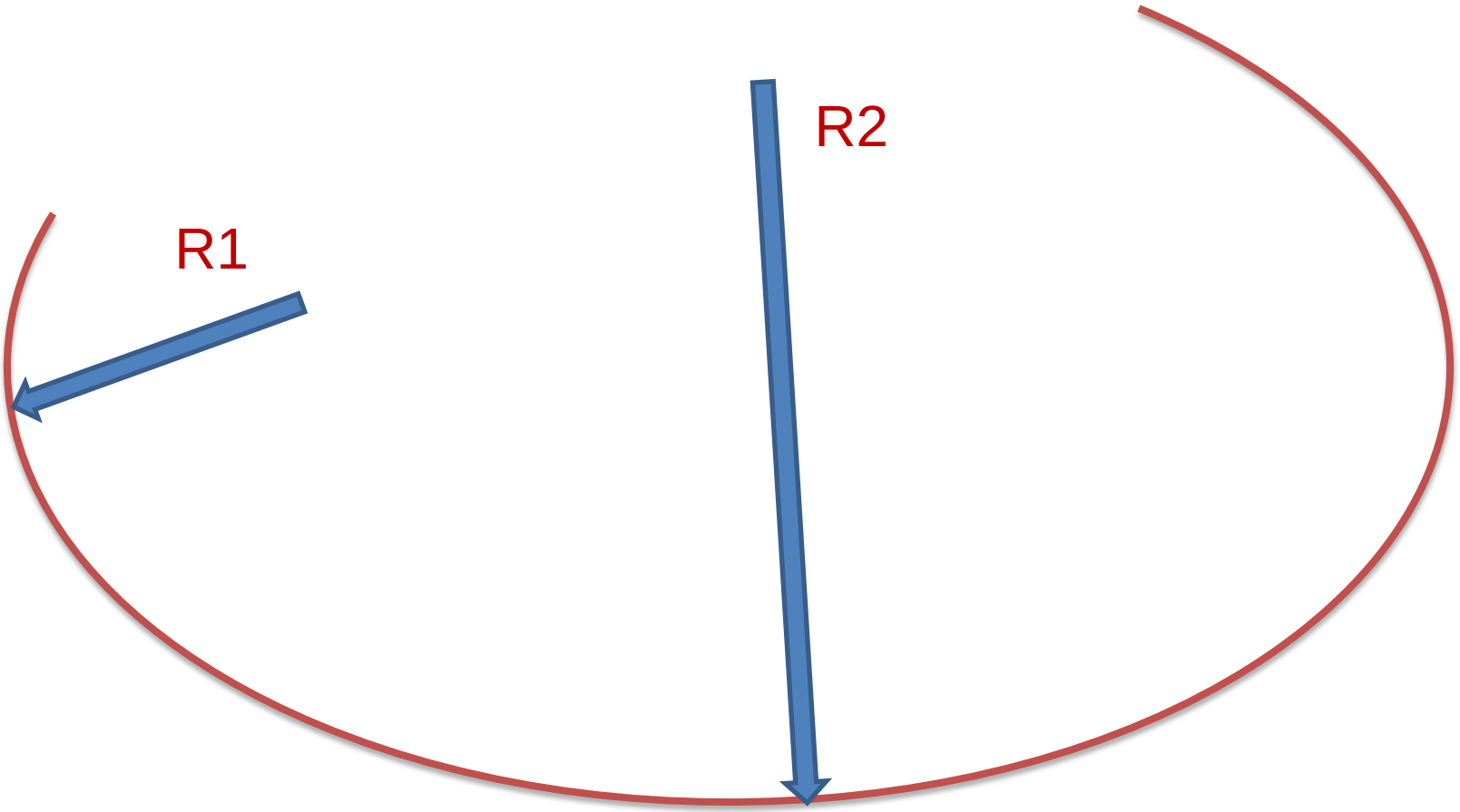


Aylanma harakat burchak tezligi va tezlanishi

$$\omega = \frac{\alpha}{t} \qquad \varepsilon = \frac{\omega}{t}$$

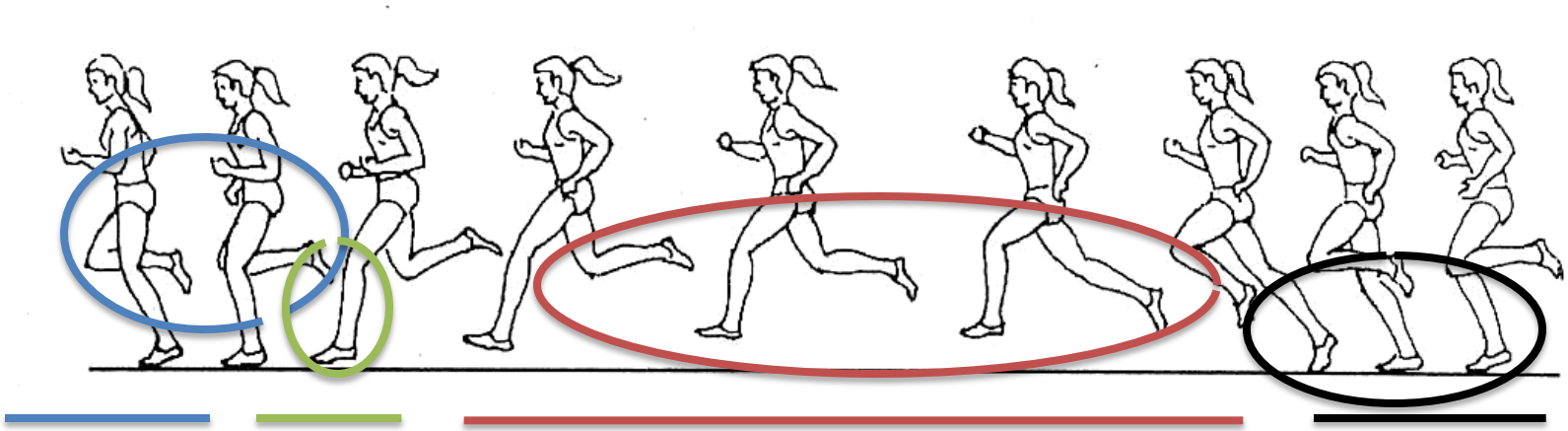
burchak tezlik va tezlanish, grad./s; grad./s^2

Harakat traektoriyasi egriligini hisoblash formulasi



$$k = \frac{1}{R}$$

Texnik tavsiflar



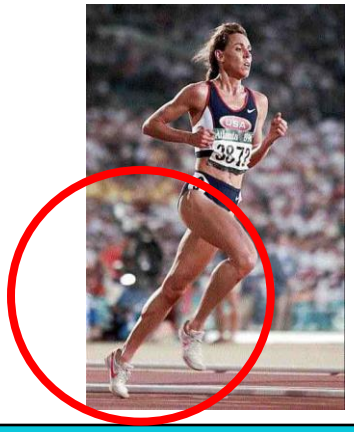
Orqaga siltash fazasi

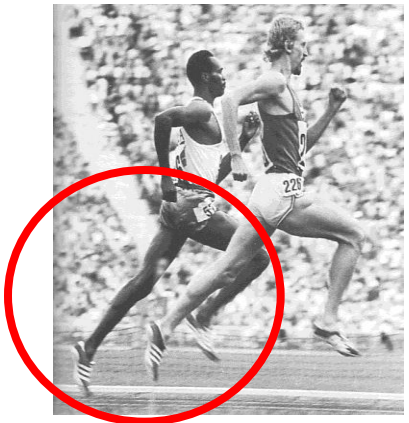
Oldi tayanch fazasi

Oldiga siltash fazasi

Orqa tayanch fazasi

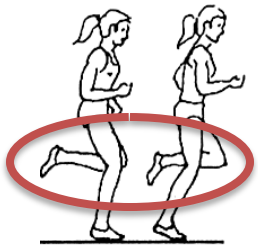
Orqa tayanch fazasi

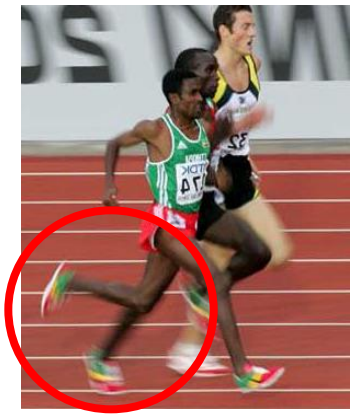




Harakatlantiruvchi vazifalar	Asosiy tavsiflar va kuzatuv predmeti
➢Oldinga harakatlantirychi kuch hosil qilish ➢Siltanuvchi oyoq sonini ko’tarish	➢Gorizont va oyoq tegini yo’lkadan uzilish nuqtasidan tizza orqali son bo’g’iniga o’tuvchi nur orasidagi burchak odatda taxminan 55 gradusni tashkil etadi ➢Odatda tana tik holatni egallaydi ➢Silnuvchi oyoq soni to’liq gorizontal emas(juda uzun qadam qo’ymaslik uchun) ➢Qo’llar harakati xarakteri kompensatsiyalovchi (ularni tezlanish paytidagi harakatidan tashqari)

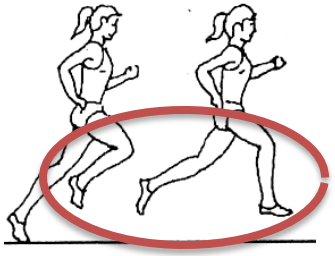
Orqaga siltash fazasi





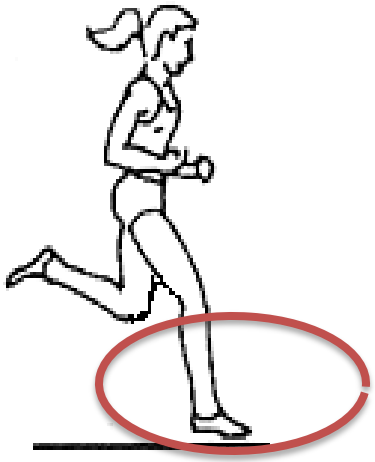
Harakatlantiruvchi vazifalar	Asosiy tavsiflar va kuzatuv predmeti
➢mushaklarni bo’shashini ta’minlash ➢Tizzani ko’tarishga tayyorgarlik	➢depsinishdan so’ng bo’shashgan oyoq tezda tizzadan bukiladi,bunda tavon orqaga itqitiladi ➢“qadam yaratish”uchun sonni tez va faol oldinga siltashni boshlanishi

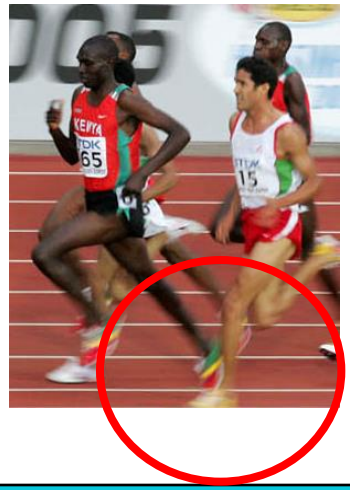
Oldiga siltash fazasi



Harakatlantiruvchi vazifalar	Asosiy tavsiflar va kuzatuv predmeti
➢Oyoqni oldinga o’tkazish va erga qo’yishga tayyorlash ➢Qadamni kerakli uzunligini ta’minlash	➢Tizzasini ko’tarilishi oxirida siltangan oyoq soni gorizontal holatga yaqin, tizza bo’g’ini qotirilgan ➢Sonni tushirish oldi tayanch fazasiga o’tishni chaqiradi(keltirib chiqaradi) ➢Qo’llar muozanatni ta’minlaydi

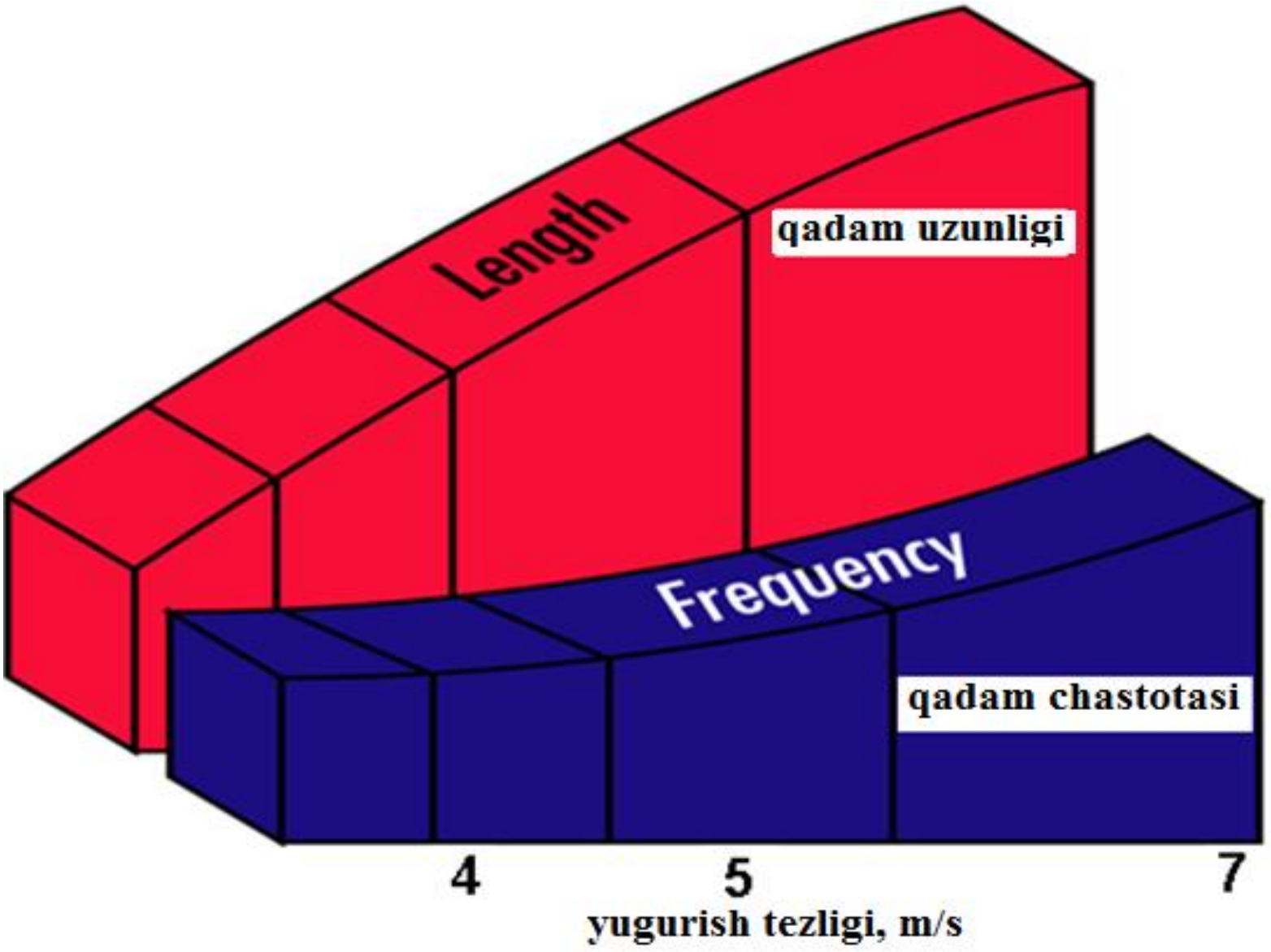
Oldi tayanch fazasi



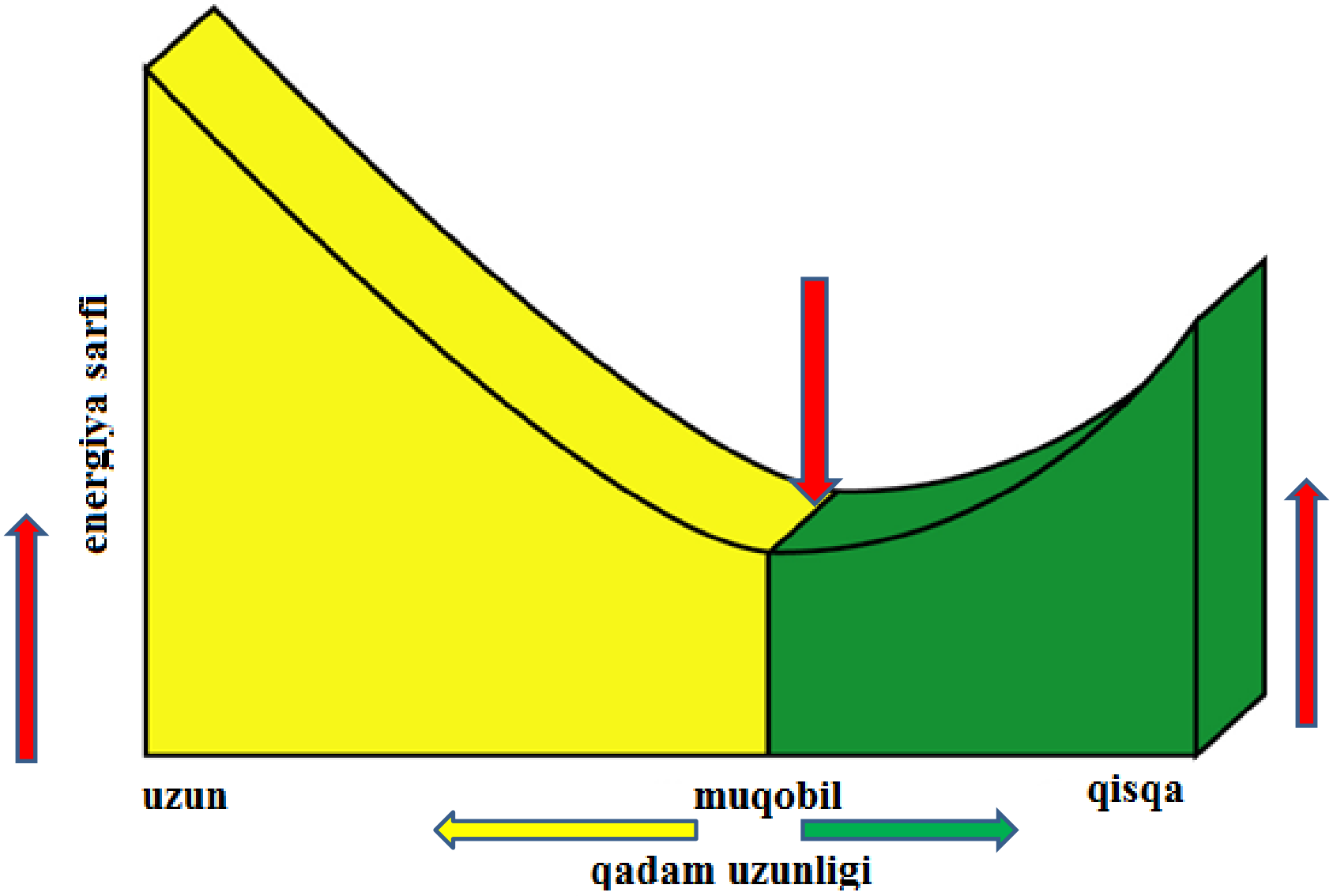


Harakatlantiruvchi vazifalar	Asosiy tavsiflar va kuzatuv predmeti
➢Erga qo’nish paytida pastga harakatlanayotgan tana momentini so’ndirish uchun, amortizatsiyalash ➢navbatdagi depsinishni bajarishga tayyorgarlik	➢Oyoq kaftini tashqi qirrasi gumbaziga oyoqni tavon bilan yo’lkaga sarba bermasdan faol qo’yish ➢Yugurish harakatlari muttasilligini buzmaslik uchun,oyoqni er bilan kontakt nuqtasi TUMMdan juda ham uzoq oldinda bo’lmasligi kerak

Qadamlar uzunligi va chastotasi



Qadam uzunligi ⟷ energiya sarfi



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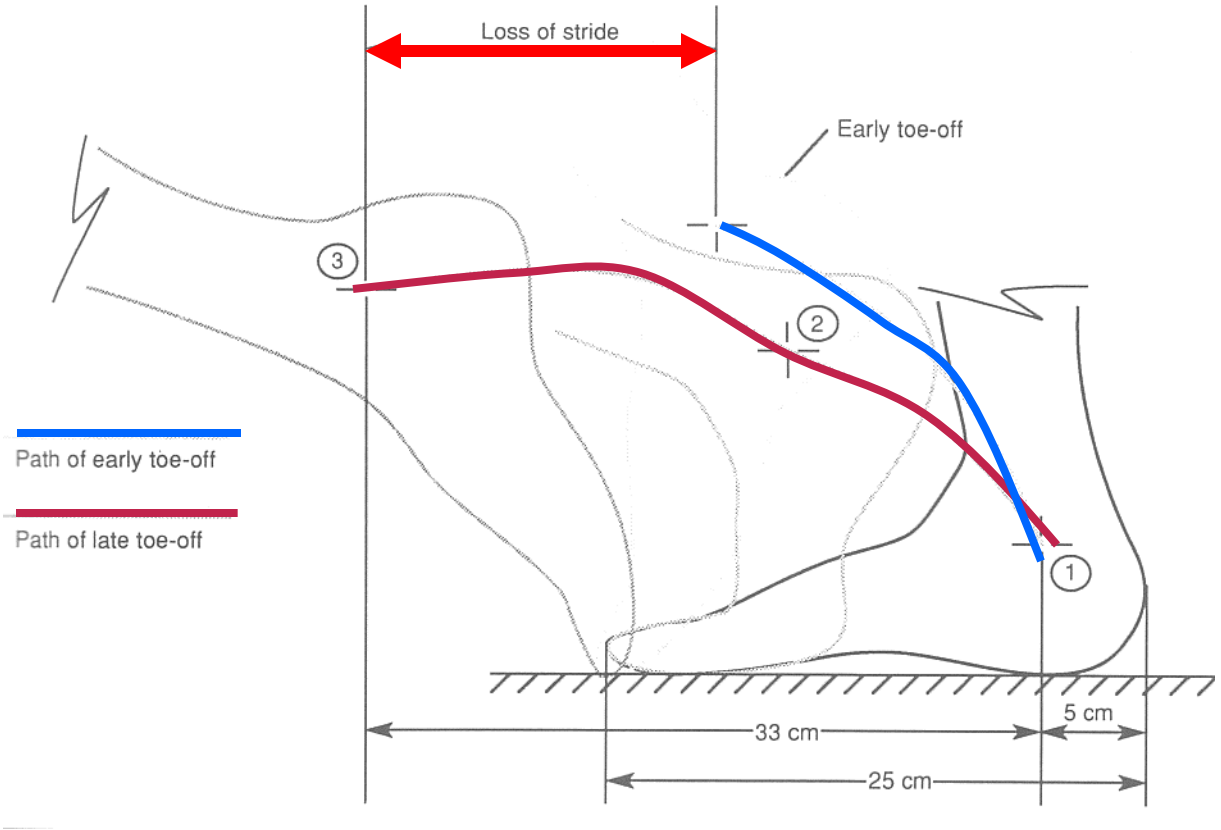

Erta va kech “tayanchdan ketish”ning qadam uzunligiga ta’siri

Oyoq kaftining joylashishi