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KOMPONEN KECERGASAN FIZIKAL, PRINSIP LATIHAN DAN PEMBOLEHUBAH LATIHAN



Oleh: Nur Ikhwan Mohamad

Buku:

Nur Ikhwan Mohamad, Ali Md. Nadzalan & Muhamad Hafiz Zainol. (2019). *Suaian fizikal taktikal bomba & penyelamat (Editor)*. Tanjong Malim, Perak. Penerbit UPSI.



OBJEKTIF PEMBELAJARAN



1. Mengenalpasti dan memahami komponen kecergasan fizikal, prinsip-prinsip latihan, dan pembolehubah-pembolehubah latihan.
2. Memahami perkaitan antara komponen kecergasan, prinsip-prinsip latihan dan pembolehubah-pembolehubah latihan dengan tindakbalas sistem tenaga, otot dan rangka.



KATA KUNCI



- komponen kecergasan berteraskan kesihatan
- komponen kecergasan berteraskan lakuan motor
- daya tahan kardiovaskular
- daya tahan otot
- kekuatan otot
- kelenturan
- komposisi tubuh badan
- imbangan
- koordinasi
- kuasa
- kelajuan
- ketangkasan
- masa reaksi
- prinsip lebihan bebanan
- prinsip ansur maju
- prinsip kebolehbalikan
- prinsip pengkhususan
- prinsip pemulihan
- kontinum sistem tenaga



Komponen Kecergasan Fizikal



BERTERASKAN KESIHATAN

Daya Tahan Kardiovaskular

Daya Tahan Otot

Kekuatan Otot

Kelenturan Otot

Komposisi Tubuh

BERTERASKAN LAKUAN MOTOR

Imbangan

Koordinasi

Kuasa

Kelajuan

Ketangkasan

Masa Reaksi

Dua set komponen kecergasan fizikal berdasarkan Caspersan et al., 1985 dan Corbin, Pangrazi & Frank, 2000. Komponen kecergasan berteraskan lakuan motor tidak terhad setakat yang tersenarai sahaja.



Komponen-komponen Kecergasan Dan Contoh Kaedah Latihan



Komponen Kecergasan	Contoh Kaedah Latihan
Daya tahan kardiovaskular, komposisi tubuh	Berterusan (larian 2.4km) atau jeda (masa kerja: masa rehat) dengan sela masa rehat pendek (kurang 60 saat dan ke bawah)
Daya tahan otot, kekuatan otot dan komposisi tubuh	Latihan bebanan / rintangan, latihan litar
Kelenturan otot	Regangan otot
Kelajuan	Latihan bebanan / rintangan tempo tinggi, pliometrik,
Kuasa	Latihan bebanan / rintangan tempo tinggi, pliometrik
Ketangkasan dan masa reaksi	Latihan kekuatan, kelajuan tindakbalas
Imbangan	Latihan kekuatan, kesedaran kinestatik
Koordinasi	Latihan kekuatan, imbangan, kelajuan pergerakan, kesedaran kinestatik, ritma dan pelarasan pergerakan
Kesedaran Kinestatik (pergerakan dan lokasi sendi)	Latihan imbangan, senaman dengan menutup mata (awas risiko kecederaan), pergerakan pliometrik, latihan kekuatan

Komponen-komponen kecergasan dan contoh kaedah latihan berdasarkan kajian-kajian saintifik (Abel, Mortara, & Pettitt, 2011; Kurz, Berg, Latin, & Degraw, 2000; Margaritopoulos et al., 2015; Marques, Ferreira, Carvalho, & Figueiredo, 2017; Milanović, Sporiš, & Weston, 2015; Paul, Gabbett, & Nassis, 2016; Ramírez-Campillo et al., 2015; Styczeń, Kantor, Przygoda, & Słomka, 2016; Zago et al., 2015).

Prinsip Latihan



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Prinsip Lebihan
Bebanan

Prinsip
Pengkhususan

Prinsip
Perbezaan
Individu

Prinsip
Kepelbagaian /
Variasi

Prinsip
Pemulihan

Prinsip
Keseimbangan

Prinsip
Kebolehbalian



Pembolehubah Latihan



- parameter atau perkara-perkara yang boleh diukur dan diubahsuai bagi memberikan respon dan kesan adaptasi yang diperlukan bagi setiap program latihan yang dibina (Goto et al., 2004; Toigo & Boutellier, 2006).



Pembolehubah Latihan	Definisi Umum
bebanan	Jumlah berat bebanan atau rintangan yang di gunakan. Contoh berat badan sendiri 65kg atau berat dumbbell 40 kg (bebanan luar).
ulangan	Jumlah bilangan kontraksi penuh otot bagi setiap lakuan senaman latihan bebanan atau bilangan lakuan senaman dalam satu pergerakan lengkap.
set	Gabungan jumlah ulangan pergerakan atau kerja tanpa henti dalam setiap satu pergerakan atau aktiviti lengkap (tanpa masa rehat).
durasi masa rehat / pemulihan	Tempoh masa otot atau tubuh berhenti dari lakuan aktiviti bagi rehat dan pemulihan.
durasi masa kerja / senaman	Tempoh masa otot atau tubuh bekerja bagi setiap lakuan atau aktiviti (tempoh masa ransangan fisiologi dan mekanikal).
tempo pergerakan	Halaju setiap satu pergerakan lakuan
julat pergerakan	Sudut pergerakan lengkap setiap lakuan senaman
jenis senaman / pergerakan / lakuan	bentuk senaman / pergerakan / lakuan yang digunakan

Pembolehubah Latihan	Definisi Umum
arah rintangan	Merujuk kepada punca kedudukan rintangan / bebanan berbanding kedudukan asal otot / tubuh.
isipadu latihan	Merujuk kepada gabungan mana-mana pembolehubah utama yang digunakan bagi menunjukkan jumlah berat keseluruhan program latihan berkenaan. Sebagai contoh: <i>Isipadu latihan bebanan= set x ulangan x % 1RM</i>
intensiti latihan	Tahap kesukaran latihan. Sebagai contoh kadar nadi latihan yang ditetapkan bagi sesi berkenaan atau peratus bebanan yang perlu diangkat dalam sesi latihan bebanan berbanding kemampuan angkatan maksima.
frekuensi latihan	Kekerapan latihan dari segi kekerapan sesi setiap minggu atau bulan atau fasa.
durasi sesi latihan	Merujuk kepada keseluruhan durasi masa latihan bagi setiap sesi
jenis latihan	Bentuk latihan yang dipilih.

Pembolehkan Latihan Kekuatan

- Set
- Ulangan
- Bebanan
- Selang masa rehat
- Tempo pergerakan
- Durasi masa
- Isipadu latihan

Pembolehkan Latihan Kardiovaskular

- Durasi masa
- Kadar Nadi Latihan
- Tempo pergerakan
- Isipadu latihan

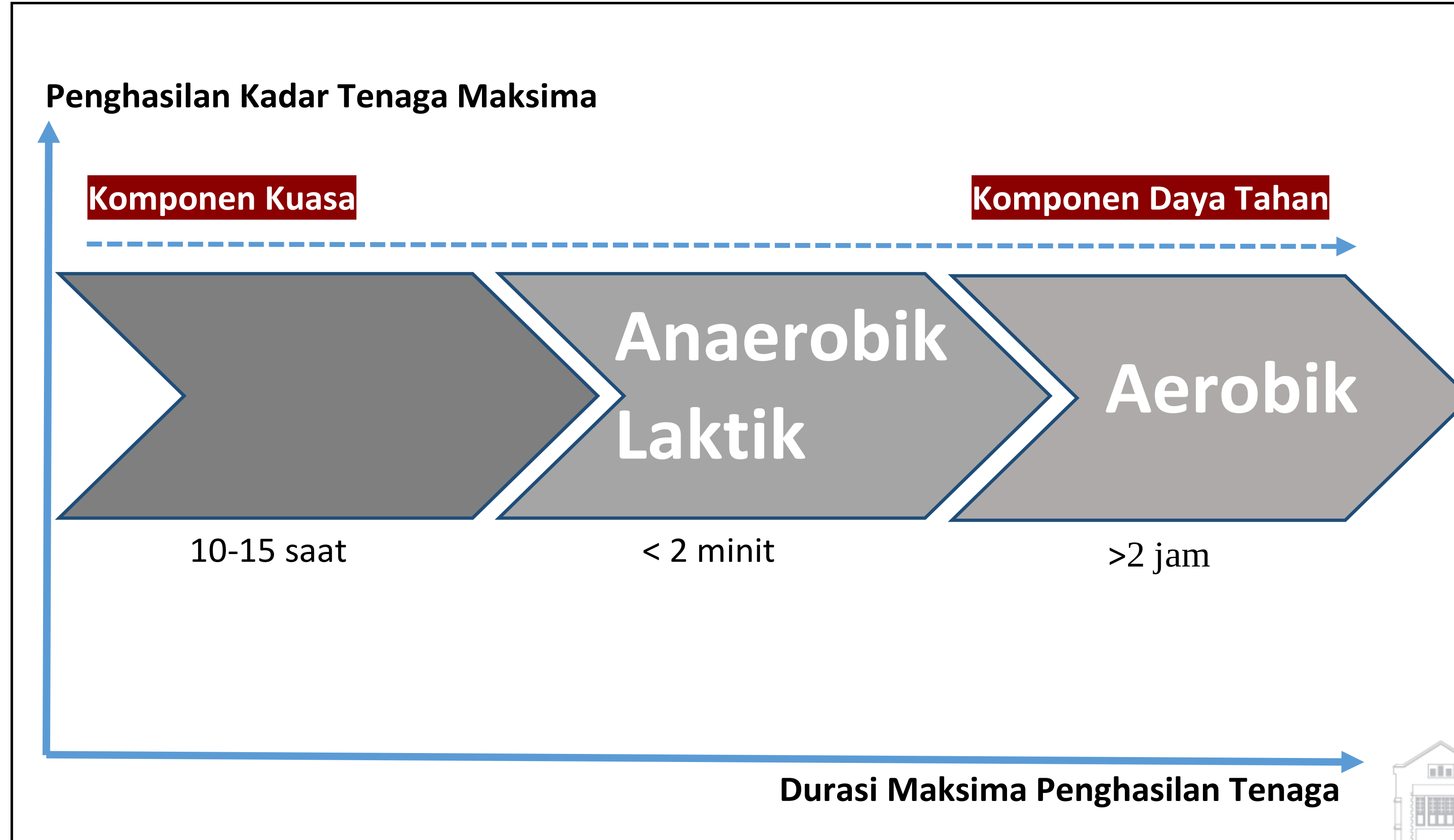
Pembolehkan Latihan Kelenturan

- Durasi masa
- Sudut sendi
- Jenis regangan
- Isipadu latihan

Cadangan pembolehkan mengikut jenis latihan



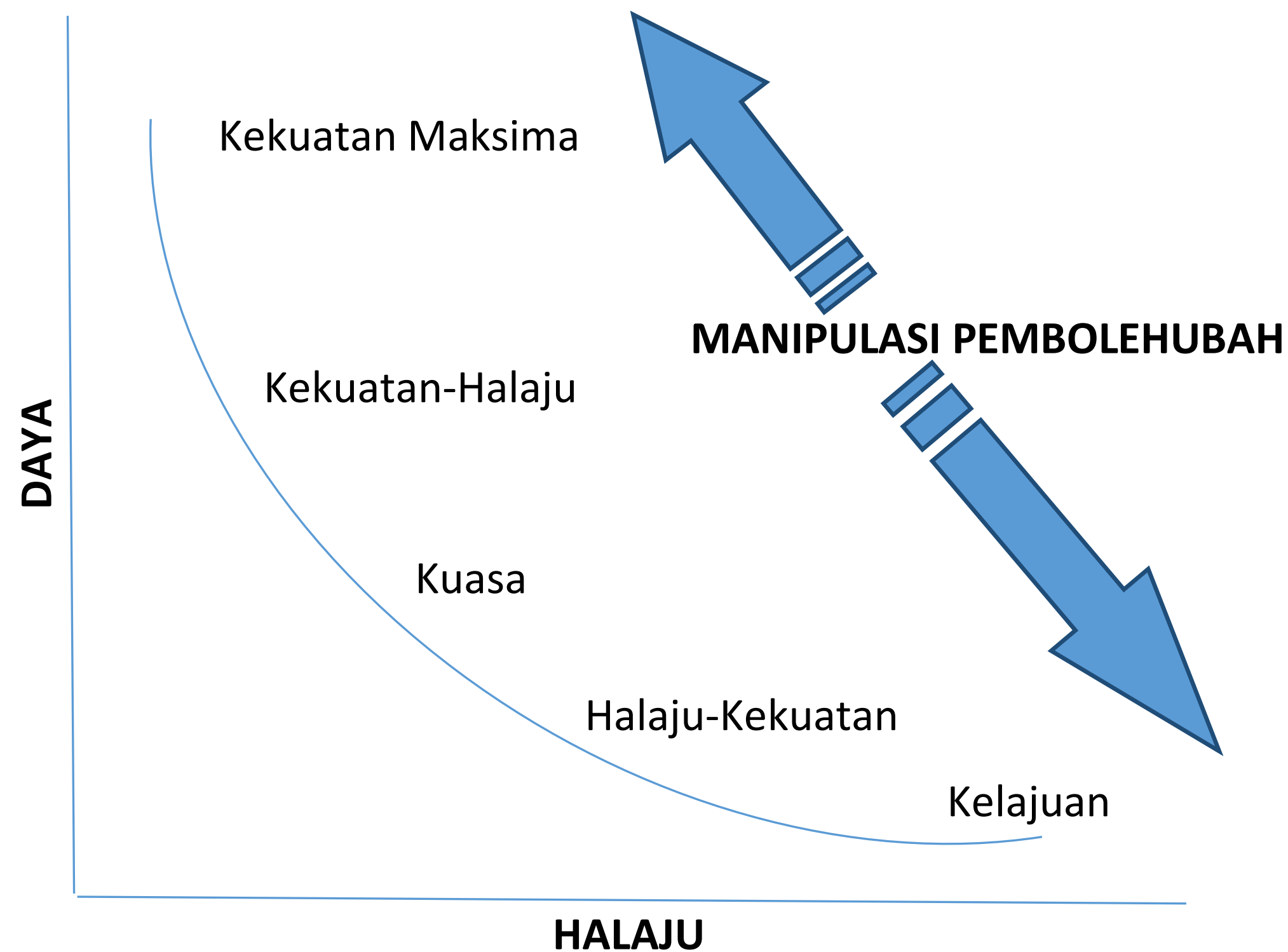
Sistem Tenaga dan Pembolehubah Latihan



- Kontinum sistem tenaga dan aplikasi dalam latihan fizikal (Artioli et al., 2012; Baker et al., 2010; Franchini, Takito, & Kiss, 2016; Gatin, 2001; Milioni et al., 2017; Perroni et al., 2010; Peyrebrune, Toubekis, Lakomy, & Nevill, 2014; M. R. Spencer & Gatin, 2001)



Lengkung Daya-Halaju dan Pembolehubah Latihan



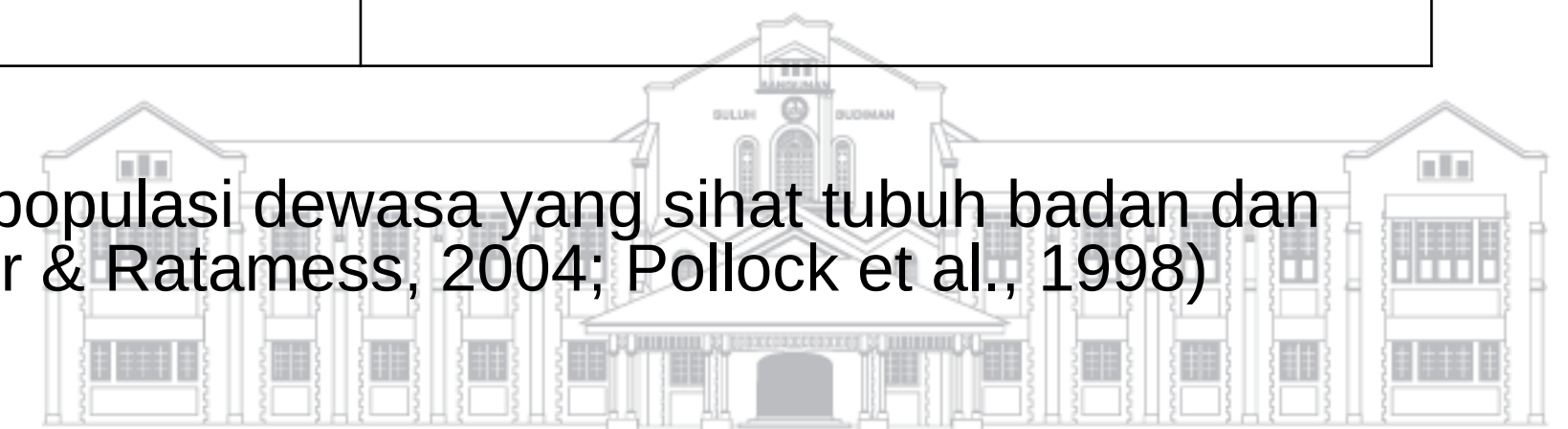
- Lengkung Daya-Halaju dan perkaitannya dengan komponen kecergasan serta manipulasi pelbolehubah latihan (Caiozzo, Perrine, & Edgerton, 1981; Cormie, McBride, & McCaulley, 2009; DeWeese, Hornsby, Stone, & Stone, 2015; Gülch, 1994; Hill, 1938; Toji, Suei, & Kaneko, 1997)

Asas Ilmu Teori dan Praktis bagi Profesional dalam Suaian Fizikal



Kekerapan	Intensiti	Durasi Masa Latihan	Jenis Latihan
UNTUK KECERGASAN KARDIOVASKULAR DAN KOMPOSISI TUBUH			
3-5 hari seminggu	55 / 65 % - 90% Kadar Nadi Maksima	20-60 minit secara berterusan atau jeda, bergantung pada intensiti.	Apa sahaja aktiviti yang menggunakan otot-otot besar tubuh. Contohnya berlari, berbasikal, berenang dan tarian aerobik.
KEKUATAN DAN DAYA TAHAN OTOT, KOMPOSISI TUBUH DAN KELENTURAN			
2-3 kali seminggu	1 set atau lebih, 8-10 senaman otot besar, 8-10 ulangan.	Bergantung kepada set dan ulangan setiap sesi (~20-40 minit).	Latihan bebanan
2-3 kali seminggu	Julat pergerakan maksima selesa tanpa kesakitan setiap bahagian sendi otot.	10-30 saat setiap regangan.	Latihan kelenturan

Cadangan parameter latihan bagi tujuan kecergasan fizikal umum untuk kesihatan dikalangan populasi dewasa yang sihat tubuh badan dan tidak mempunyai sebarang masalah kecederaan atau kesakitan (Kraemer et al., 2002; Kraemer & Ratamess, 2004; Pollock et al., 1998)



Kesimpulan



- Tujuan utama latihan suaian fizikal adalah untuk menyesuaikan fizikal seseorang individu mengikut keperluan mereka (kecergasan gaya hidup sihat, sukan prestasi tinggi, atau taktikal).
- Keperluan individu biasanya lebih mudah dibahagikan mengikut pembahagian komponen kecergasan.
- komponen kecergasan berteraskan kesihatan adalah teras utama dan perlu di latih terlebih dahulu
- Penting: Penyesuaian pembolehubah mengikut ciri-ciri sistem tenaga yang diinginkan dan lengkuk daya-halaju dalam menentukan pembolehubah prestasi

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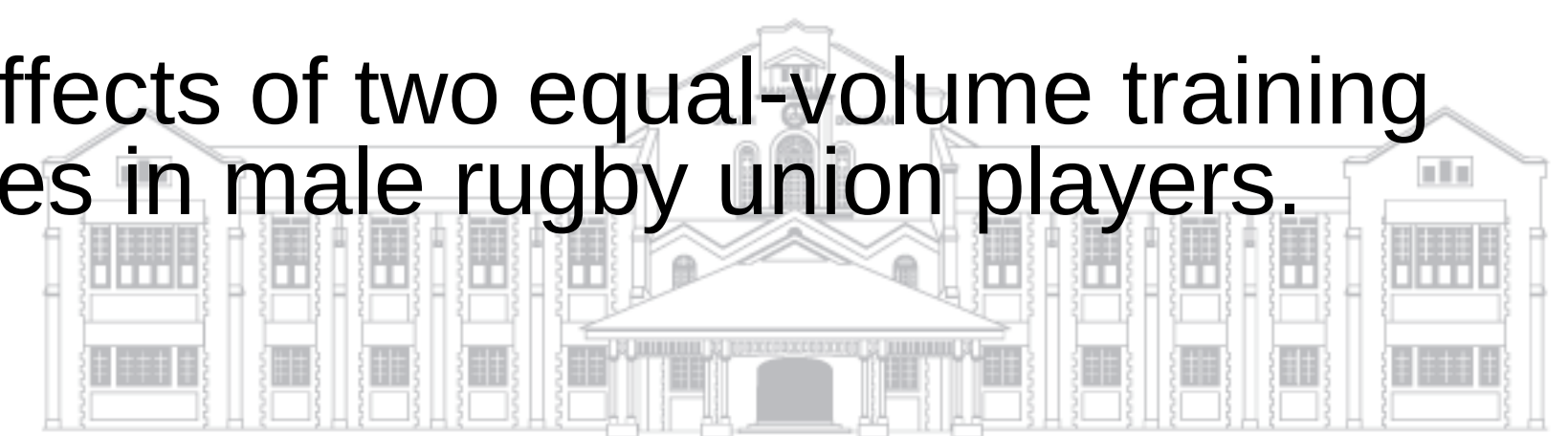
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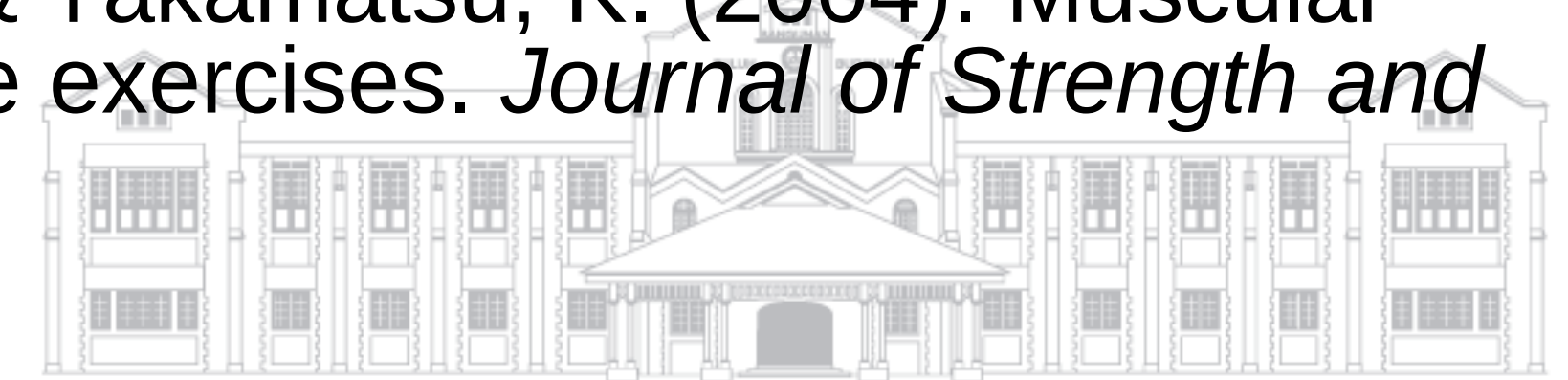
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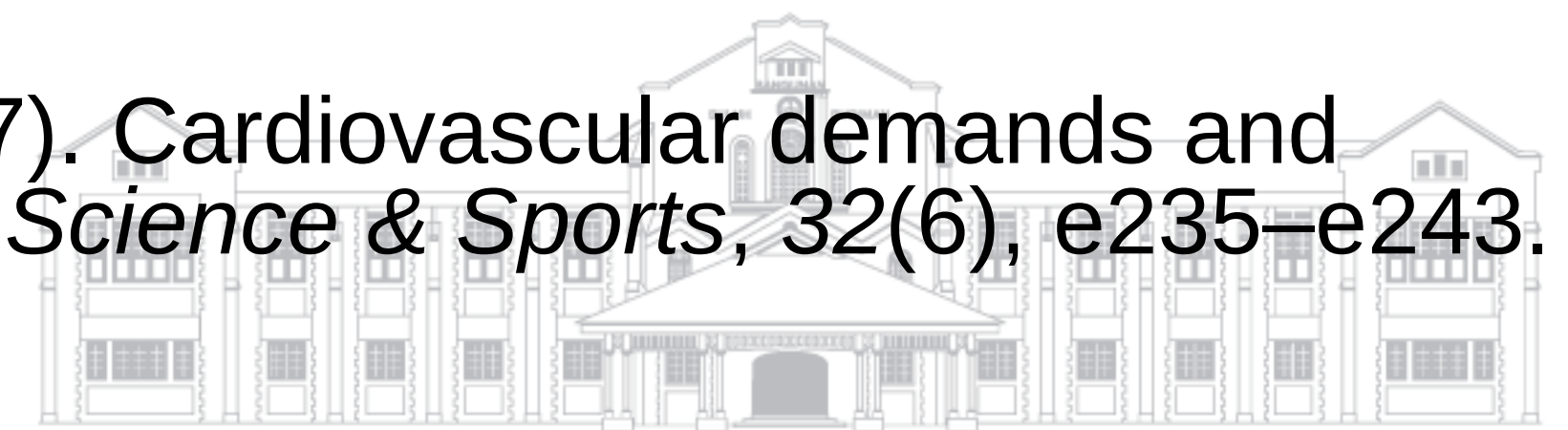


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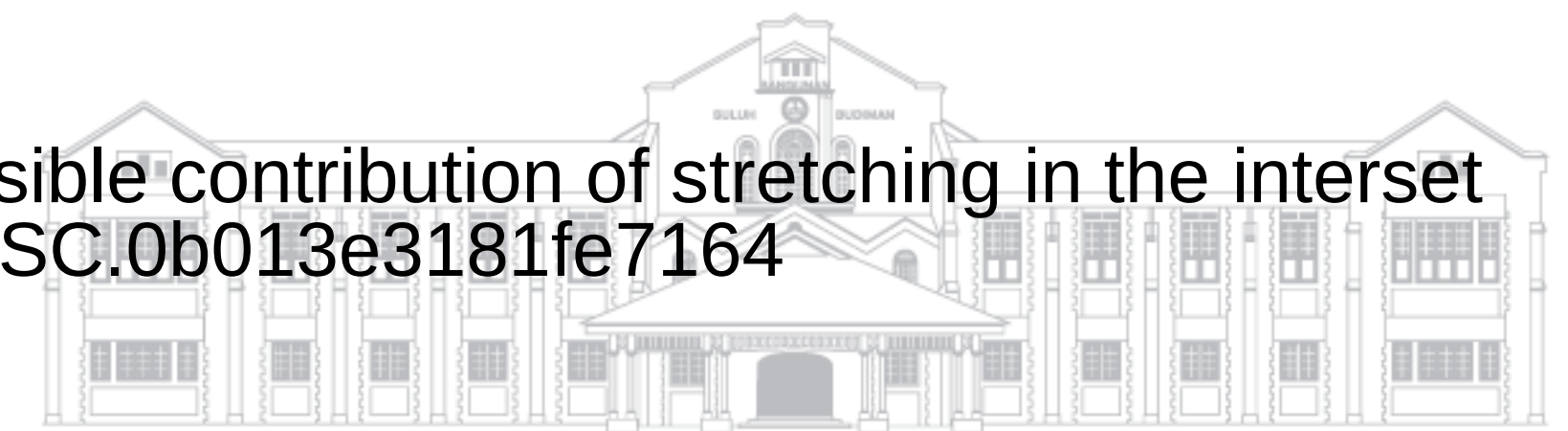
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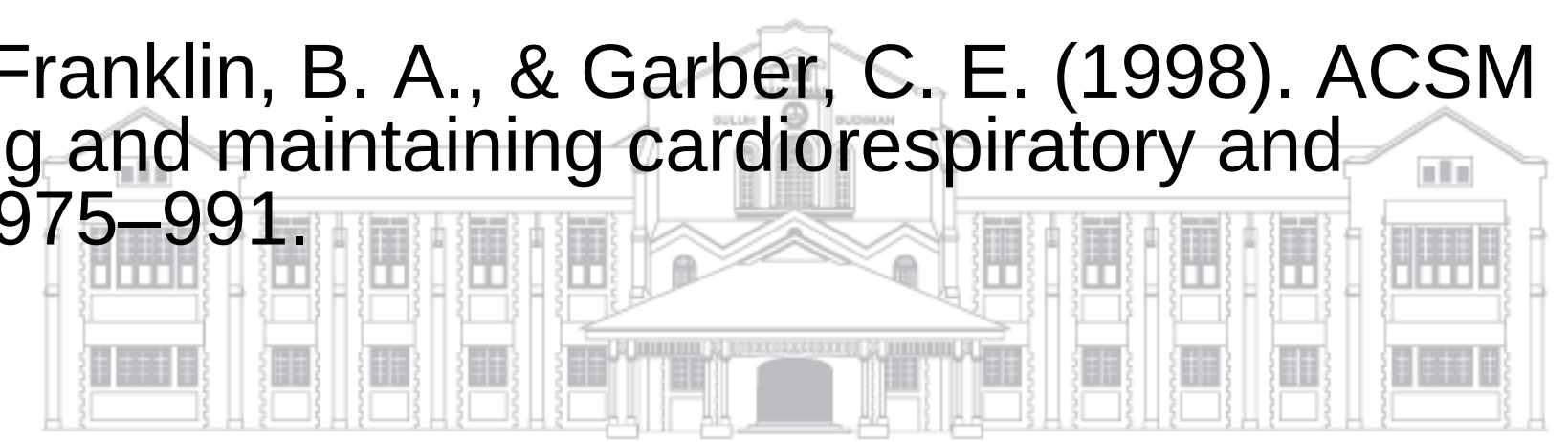
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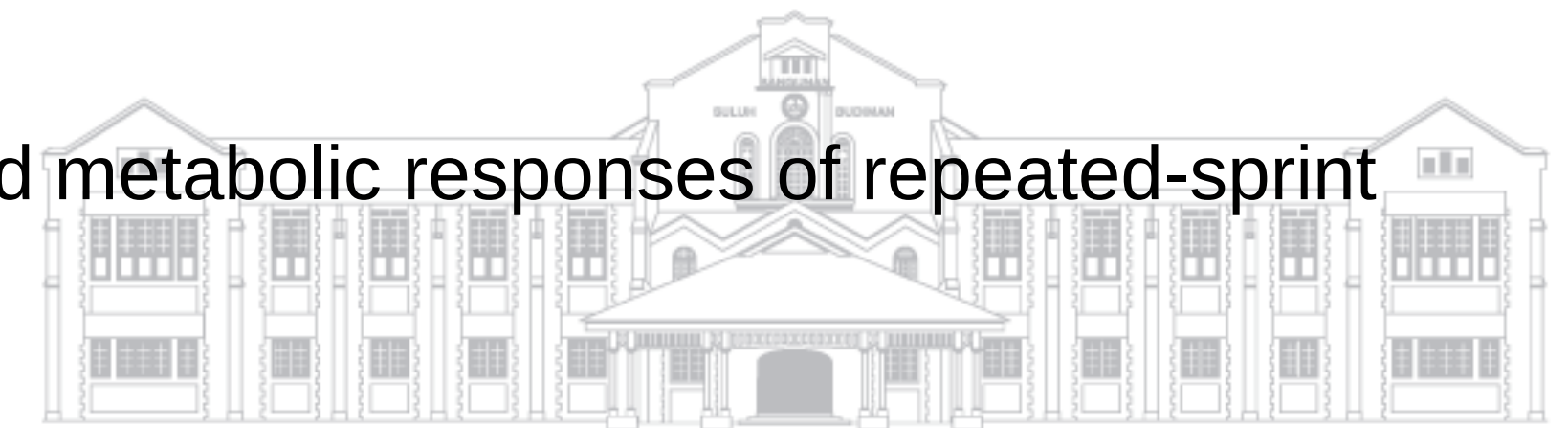
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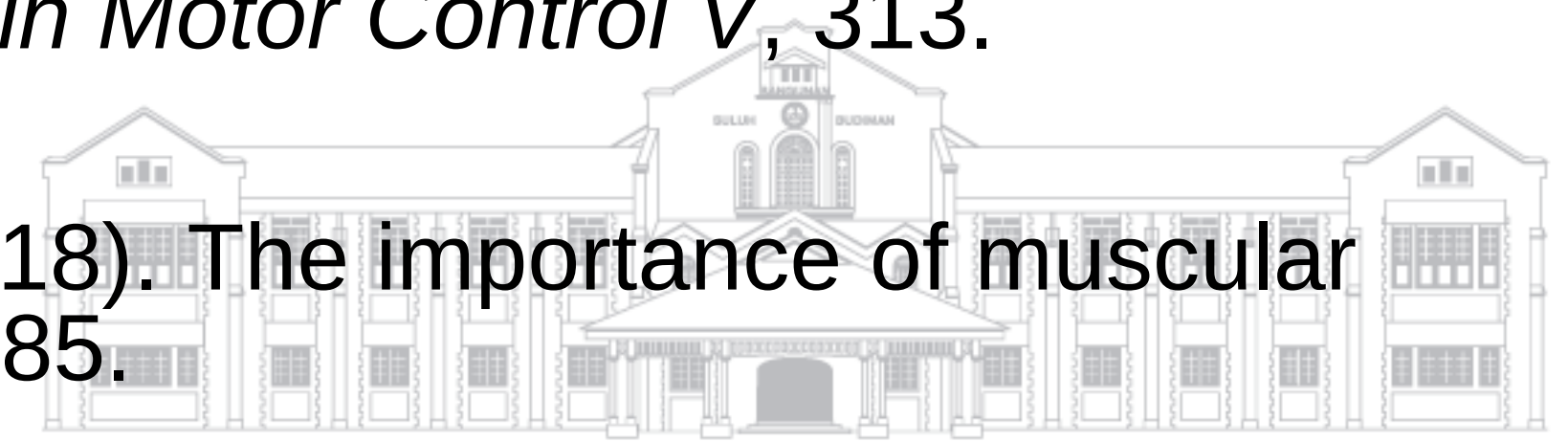
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