Resistance to unwanted tooth movements

**Newton's 3rd Law:**
Every force has an equal but opposite reactionary force.

Usually refers to the stability of the site that provides resistance to the reactionary forces generated upon exertion of tooth moving forces.
Anchorage

Resistance to unwanted tooth movements

**Newton's 3rd Law:**
Every force has an equal but opposite reactionary force.

First aspect of treatment planning
Anchorage

Intra-oral

Intra maxillary

Simple

Reciprocal

Compound

Cortical

Absolute

Extra-oral

Inter maxillary

Head gear
Intra-oral

**Teeth**: number of teeth involved and the total root surface area.

**Bone**: area involved and direction of force.

**Micro-implants**: Sizes, number and location of implants.

**Muscles**: Direction of force application and muscle tone.
The anchorage providing teeth and the moved teeth are located in the same dental arch.

For example: Springs extended from upper molars to retract upper canines.
The anchorage providing teeth and the moved teeth are located in the opposite arches. For example: box elastics to close dentoalveolar open bite.
Simple anchorage

Movement of the smaller tooth in response to pulling/pushing forces exerted from the larger tooth, usually in the same dental arch.

For example: pulling upper canine tooth by spring extended from upper molar.
Reciprocal anchorage

When orthodontic force is applied between equally sized teeth they tend to move the same distance from each other but in opposite directions.

For example: pulling two centrals towards each other to close central diastema.
Compound anchorage

Also called reinforced anchorage where the amount of anchorage is augmented by increasing the number of teeth on the anchor side or gaining support from surrounding structures such as palatal bone or circum-oral musculature.

Nance button

Removable appliance
Cortical anchorage

When the alveolar cortical plate act as a barrier against unwanted movement of anchor teeth.

For example: using trans palatal arch to prevent mesial movement of upper molar teeth.

Trans-palatal arch TPA

Mandibular bar
Absolute anchorage

Tooth movement occur with zero movement of anchorage teeth.

For example: retraction of the anterior teeth against temporary anchorage device (TAD)

Buccal implant

Palatal implant
When tooth movement occurs due to orthodontic forces exerted from extraoral skeletal structure. For example: the use of headgear and J hooks to retract upper anterior teeth.
Factors affecting anchorage

- Roots shape and total roots surface area
- Nature of orthodontic force
- Number of teeth involved
- Occlusion (intercuspsation)
- Individual variations
- The availability of anchorage enforcement