Therapeutic uses of cold :-

Recent injury :- The function of ice application of during immediate (recent) treatment is to decrease the cell metabolism. Therefore decreases the need for oxygen in injured area. This effect reduces the amount of secondary hypoxic injury and secondary enzymatic injury by enabling the tissues in the injured area to survive the limited amount of oxygen they are receiving.

When bleeding occurs on the skin surface the

application of cold causes immediate vasoconstriction and makes the blood more viscid, both diminishes the blood flow.

If cold application combined with pressure over the wound leads to haemostasis, however the cooling must not be intense or so prolonged because it will delay the blood coagulation by lengthening the clotting time.

In case heat burn cooling of area lower the temperature and

Pain :- can be reduced by several ways

By reducing muscle spasm
By reducing the release of pain inducing ~~red~~ irritants
By reducing the conduction velocity number of impulse this is by reducing the rate of synaptic transmission and increasing the time required for depolarisation and repolarisation.

By pain gate mechanism :-

Stimulation of cold receptors which send back impulses to large diameter which have to pass spinal cord via posterior route.

These impulses which arrive through relatively large diameter nerve fibre effectively block out any other pain impulses attempting to enter

the spinal cord that is the pain gate is closed and gives temporary relief.

Muscle spasm :- Cold reduces spasm by suppressing the stretch reflex by two mechanism -

1. It decreases the pain by reducing the rate of afferent nerve impulses.

a) By decreasing the sensitivity of muscle spindle.

b) As spasm and pain are interdependent reduction in one causes reduction in other.

Inflammation :- Cold application suppresses the inflammatory response by -

a) Reducing the release inflammatory mediators

b) Decreasing prostaglandin synthesis

c) Decreasing capillary permeability

d) Decreasing leukocyte endothelial interaction