```cpp
/*
Principles of Engineering: Cyborg Arm
Arduino Code for EMG signal processing and Motor output

Servo used: BOP6 Motor on pin 10
Electrode input on pins A0 and A1
*/
#include <Servo.h>
//Declaring some variables needed for use later.

Servo cbservo; //The Servo

//EMG Input Variables
float sensorValue;
float refValue;
float average = 0;

//Servo Variables
int mode = 0;
float current_angle;
float desired_angle;
float max_angle;
float stepp;

//Servo Functions
int choose_mode(int n);
void move_servo(float a, float b);


void setup() {
  //Baud Rate of 115200
  Serial.begin(115200);
  //Pins for Electrodes ( A1, A0 ) and Debugging LED
  pinMode(A0,INPUT);
  pinMode(A1,INPUT);
  pinMode(13,OUTPUT);

  //Servo
  cbservo.attach(10);
 }


void loop(){
    sensorValue = analogRead(A0);
    refValue = analogRead(A1);
    //Absolute value for a positive signal reading
    //Subtracting the reference input to get only the bicep action potential
    sensorValue = abs(sensorValue-refValue);

    //Print value
    Serial.println(sensorValue);

    //Choose Motor mode based on value
    mode = choose_mode(sensorValue);
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  switch (mode){
    case 1:
      //Motor mode 1 - - weakest mode. Spring should be at its 1/4
displacement
      desired_angle = max_angle/4;
      //cbservo.write(desired_angle); - If the motor does not move fast
enough
      move_servo(current_angle, desired_angle);
      break;

    case 2:
      //Motor mode 2 - - Reasonably Strong. Spring should be at its 1/2
displacement
      desired_angle = max_angle/2;
      //cbservo.write(desired_angle);
      move_servo(current_angle, desired_angle);
      break;

    case 3:
      //Servo mode 4 - - Comparably Strong . Spring should be at its 3/4
displacement
      desired_angle = max_angle * .75;
      //cbservo.write(desired_angle);
      move_servo(current_angle, desired_angle);
      break;

    case 4:
      // Servo mode 4 - - strongest mode. Spring should be at its max
displacement
      desired_angle = max_angle;
      // cbservo.write(desired_angle);
      move_servo(current_angle, desired_angle);
      break;

    default:
      //Servo mode 0 - - Off. Spring should not be tensioned
      desired_angle = 0;
      //cbservo.write(desired_angle);
      move_servo(current_angle, desired_angle);
      break;
  }
    delay(5); //Prevent overloading the serial monitor

    //Debugging LED - check if Arduino is running this part of the loop
    pinMode(13,OUTPUT);
    digitalWrite(13,HIGH);
}

 int choose_mode(float n){
   //Chooses mode based on sensor input
   if (n > 100 && n < 100)
     return 1;

   if (n >= 200 && n < 500)
     return 2;
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    if (n >= 500 && n< 700)
      return 3;

    if (n >= 700)
      return 4;
    return 0;
  }

void move_servo(float a, float b){
  //Moves the servo over 10 steps in case servo moves too fast
  stepp = (b - a)/10.;
  while (a < b){
    current_angle += stepp;
    cbservo.write(stepp);}
}
}
```